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Engineering-Science, Inc., McLean, VA

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Volume III

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Enforcement Series

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16. ABSTRACT

Current copies of the air pollution control regulations of all fifty states, three territories, and twelve local agencies were reviewed for the purpose of compiling information on emission standards, compliance test methods, and continuous emission monitoring as applied to existing stationary sources. Specific pollutants of interest were opacity, SO_2, NO_x, and sulfur compounds other than SO_2. The intent of this review was to identify the assortment of types, formats, and exemptions which prevail in existing SIP regulations for selected sources and pollutants, thereby providing guidance to EPA for writing future continuous emission monitoring regulations. This report is not to be used as an all inclusive reference document for such information.

The primary focus of this review and compilation was the following existing source categories:

continued on next page

Topics discussed in this volume include the following:

17. KEY WORDS AND DOCUMENT ANALYSIS

a. DESCRIPTORS	b. IDENTIFIERS/OPEN ENDED TERMS	c. COSATI Field/Group
Air Pollution Control Reliability Monitors	Continuous Monitors	13B 14D 14G

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cont./pg2

OPACITY

- Fossil fuel-fired steam generators (FFFSG)
- Portland cement plants
- Catalyst regenerators of fluid bed catalytic cracking units (FBCCU)
- Hog fuel-fired boilers
- Kraft recovery furnaces
- Basic oxygen process furnaces (BOPF)
- Ferroalloy electric submerged arc furnaces

NO_x

- FFFSG
- Nitric acid plants

SO_2

- FFFSG
- Sulfuric acid plants
- Smelters

The report is organized into a separate Executive Summary and three volumes. The first volume contains an analysis of state adopted emission standards for opacity, SO_2, NO_x, malfunctions and scheduled maintenance, and continuous monitoring regulations for existing stationary sources. Volume II provides a tabular summary of key components of the applicable emission standards and regulations including source category, minimum source capacity, averaging time of standard, exemptions, etc. Volume III of the report contains the complete text of the regulations cited.

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COMPILATION AND ANALYSIS OF
STATE REGULATIONS FOR
SO_2, NO_x, OPACITY, CONTINUOUS MONITORING,
AND APPLICABLE TEST METHODS

VOLUME III

EPA CONTRACT NO. 68-01-4146
TASK ORDER 40

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FOREWORD

This research was performed for the Division of Stationary Source Enforcement (DSSE), Environmental Protection Agency under Task Order No. 40, EPA Contract No. 68-01-4146. Mr. Howard Wright, Compliance Monitoring Branch, Division of Stationary Source Enforcement was the EPA Task Manager.

Because this document is a product of the efforts of many individuals, it is impossible to acknowledge each person who has contributed. However, special recognition is given to the fifty states, three territories, and twelve local agencies who provided the information that served as the foundation of this research.

DISCLAIMER

This report is issued by the Office of Enforcement, Environmental Protection Agency. Copies are available for a nominal cost from the National Technical Information Service, 5285 Port Royal Road, Springfield, VA. 22161. The opinions expressed in this report are those of the producing contractor and are not necessarily those of the U.S. Environmental Protection Agency. This report is not to be used as an all inclusive reference document for existing SIP regulations for selected sources and pollutants.

APPENDIX A

- 40 CFR 51.19, SOURCE SURVEILLANCE
- 40 CFR 51, APPENDIX P
- 40 CFR 60.13, MONITORING REQUIREMENTS
- 40 CFR 60, APPENDIX B

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§ 51.19 Source surveillance.

Each plan shall provide for monitoring the status of compliance with any rules and regulations which set forth any portion of the control strategy. Specifically, each plan shall, as a minimum, provide for:

(a) Legally enforceable procedures for requiring owners or operators of stationary sources to maintain records of, and periodically report to the State information on, the nature and amount of emissions from such stationary sources and/or such other information as may be necessary to enable the State to determine whether such sources are in compliance with applicable portions of the control strategy.

(b) Periodic testing and inspection of stationary sources.

(c) Establishment of a system for detecting violations of any rules and regulations through the enforcement of appropriate visible emission limitations and for investigating complaints.

(d) Procedures for obtaining and maintaining data on actual emissions reductions achieved as a result of implementing transportation control measures. In the case of measures involving inspection, maintenance, or retrofit, these data shall include the results of an emission surveillance program designed to determine actual average per vehicle emissions reductions attributable to inspection, maintenance, and/or retrofit. In the case of measures based on traffic flow changes or reductions in vehicle use, the data shall include observed changes in vehicle miles traveled (VMT) and average speeds. The data shall be maintained in such a way as to facilitate comparison of the planned and actual efficacy of the transportation control measures.

(e) Legally enforceable procedures to require stationary sources subject to emission standards as part of an applicable plan to install, calibrate, maintain, and operate equipment for continuously monitoring and recording emissions; and to provide other information as specified in Appendix P of this part.

(1) Such procedures shall identify the types of sources, by source category and capacity, that must install such instruments, and shall identify for each source category the pollutants which must be monitored.

(2) Such procedures shall, as a minimum, require the types of sources set forth in Appendix P of this part (as such appendix may be amended from time to time) to meet the applicable requirements set forth therein.

(3) Such procedures shall contain provisions which require the owner or operator of each source subject to continuous emission monitoring and recording requirements to maintain a file of all pertinent information. Such information shall include emission measurements, continuous monitoring system performance testing measurements, performance evaluations, calibration checks, and adjustments and maintenance performed on such monitoring systems and other reports and records required by Appendix P of this part for at least two years following the date of such measurements or maintenance.

(4) Such procedures shall require the source owner or operator to submit information relating to emissions and operation of the emission monitors to the State to the extent described in Appendix P as frequently or more frequently as described therein.

(5) Such procedures shall provide that sources subject to the requirements of § 51.19(e)(2) shall have installed all necessary equipment and shall have begun monitoring and recording within 18 months of (i) the approval of a State plan requiring monitoring for that source or (ii) promulgation by the Agency of monitoring requirements for that source. However, sources that have made good faith efforts to purchase, install, and begin the monitoring and recording of emission data but who have been unable to complete such installation within the time period provided may be given reasonable extensions of time as deemed appropriate by the State.

(6) States shall submit revisions to the applicable plan which implement the provisions of this section by October 6, 1975.

[36 FR 22398, Nov. 25, 1971, as amended at 38 FR 15196, June 8, 1973; 40 FR 46247, Oct. 6, 1975]

§ 51.20 Resources.

Each plan shall include a description of the resources available to the State and local agencies at the date of submission of the plan and of any additional resources needed to carry out the plan during the 5-year period following its submission. Such description, which shall be provided in a form similar to that in Appendix K to this part, shall include

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the two retrofits are combined, the emissions reductions obtained from each can be considered additive.

[38 FR 15197, June 8, 1973]

Appendix O

The following guidelines are intended to assist in the development of regulations and procedures to comply with the requirements of § 51.18.

1. With respect to facilities which would significantly affect air quality because of emisisons arising from associated mobile source activity, review procedures should cover any facility which can reasonably be expected to cause or induce sufficient mobile source activity so that the resulting emissions might be expected to interfere with the attainment or maintenance of a national standard. The likelihood that there will be such interference will vary with local conditions, such as current air quality, meteorology, topography, and growth rates. For this reason, it is not practicable to establish definitive nationally applicable criteria as to the types or sizes of such facilities which should be reviewed. There are, in however, certain types of facilities which generally should be considered for review. Experience and estimating techniques have indicated that the air quality impact of certain types and sizes of facilities is potentially significant regardless of their location. They include major highways and airports, large regional shopping centers, major municipal sports complexes or stadiums, major parking facilities, and large amusement and recreational facilities. The above examples are not meant to be exhaustive. Local conditions must be considered in determining which types of facilities will be subject to new source review.

New source review procedures must also consider the impact of a new or modified source in political jurisdictions other than the one in which it is located. Construction or modification of that source must be prevented if the impact in another political jurisdiction is great enough to interfere with attainment or maintenance of a national standard, whether or not there is significant impact in the political jurisdiction of the facility.

2. Frequently, a substantial amount of information will be needed to make the determinations required by § 51.18. In addition to general information on the nature, design, and size of a facility, data on its expected mode of operation also will be needed in order to estimate the types and amounts of air pollutant emissions likely to be associated with it. The operational data needed to make such estimates may include time periods of operation, anticipated numbers of employees and/or patrons, expected transportation routes, modes, and habits of employees and/or patrons, and so on.

Data on present air quality, topography, and meteorology and on emissions from other sources in the affected area may also be necessary.

In those cases where an environmental impact statement (EIS) has been or will be prepared under the National Environmental Policy Act or similar State or local laws, the EIS may well be an excellent source of information to aid in making the determinations required by § 51.18. Accordingly, agencies responsible for new source reviews are encouraged to make such use of EIS wherever possible in order to avoid needless duplication of information gathering and analysis.

3. Wherever possible, modeling techniques for approximating the effects of facilities with associated mobile source activity on air quality should be used. A simplified relationship between emission density (pollutant mass/time/area), size of an area (such as a parking lot) and maximum downwind concentration of carbon monoxide is given in figure 1. This relationship was derived using a technique similar to one used by Hanna.[1] The relationships depicted in figure 1 are based on assumptions of flat terrain, average atmospheric stability (class D) with a steady wind speed of 1 meter/second, constant wind direction, even distribution of emissions at ground level over the area, and insignificant edge effects. Various assumptions are needed to calculate precisely the emission density from a facility, including vehicle speeds within the area, the distribution of automobile ages (which will determine which vehicle emission factor to use), the average area occupied by a vehicle, the fraction of the total area which may be occupied by vehicles, and the maximum number of vehicles running simultaneously for 1-hour and 8-hour periods (to determine if either carbon monoxide ambient air quality standard will be exceeded).

Prior to employing the emission density-air quality relationship in figure 1, other factors may first have to be considered in determining whether ambient air quality standards will be exceeded. These factors include measured or estimated existing air quality, the impact of any point sources planned on or near the facility and the impact of any traffic routes on or near the facility passing within the close proximity of critical receptors. Also, consideration should be given to any factors which differ substantially from the assumptions made in the figure 1 relationship, such as topography, meteorology aerodynamic effects, and spatial distribution of motor vehicles, height of emission, and any facility configuration which would constrain the dispersion of pollutants (such as a parking deck).

In addition to providing an estimate of the impact of individual area sources, relationships similar to those depicted in figure 1 can be of value in determining which types

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[1] Hanna, S. R., A Simple Method of Calculating Dispersion from Urban Area Sources. Journal of the Air Pollution Control Association, vol. 21, pp. 714–777 (1971).

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and sizes of facilities should be subject to review.

A technique incorporating the figure 1 relationship exists and will be available to the States and through the regional offices. Several additional techniques to evaluate the impact of indirect sources of carbon monoxide are currently under study and will be made available when developed.

The following publications are among those describing other available techniques for estimating air quality impact of direct and indirect sources of emissions:

(1) Turner, D. B.; Workbook of Atmospheric Dispersion Estimates, PHS No. 999-AP-26 (1969).

(2) US EPA; Compilation of Air Pollutant Emission Factors OAP No. AP-42 (Feb. 1972).

(3) Briggs, G. A.; Plume Rise; TID-25075 (1969), Clearinghouse for Federal Scientific and Technical Information, Springfield, Va. 22151.

(4) Mancuso, R. L., and Ludwig, F. L.; Users Manual for the APRAC-1A Urban Diffusion Model Computer Program. Stanford Research Institute Report prepared for EPA under contract. CPA 3-68 (1-69) (Sept. 1972). Available at Clearinghouse for Federal Scientific and Technical Information, Springfield, Va. 22151.

(5) Zimmerman, J. R., and Thompson, R. S.; User's Guide for HIWAY, paper under preparation, Met. Lab., EPA, RTP, N.C.

(6) USGRA: Proceedings of Symposium on Multi-Source Urban Diffusion Models, OAP Publication No. AP-86 (1970).

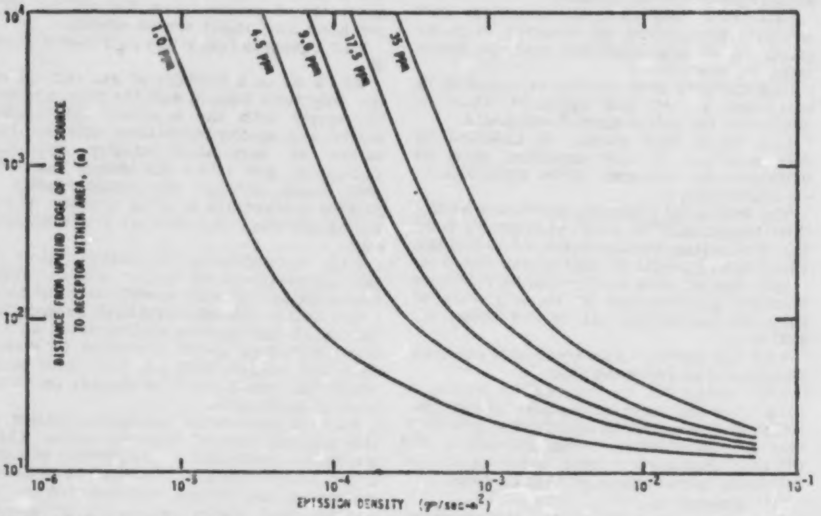
(7) Air Quality Implementation Planning Program, volume I, Operators Manual, PB 198-299 (1970). Clearinghouse for Federal Scientific and Technical Information, Springfield, Va. 22151.

(8) Hanna, S. R.; Simple Methods of Calculating Dispersion from Urban Area Sources, paper presented at Conference on Air Pollution Meteorology, Raleigh, N.C. (Apr. 1971). Available at Clearinghouse for Federal Scientific and Technical Information, Springfield, Va. 22151.

(9) ASME: Recommended Guide for the Prediction of Dispersion of Airborne Effluents, United Engineering Center, 345 East 47th Street, New York, N.Y. 10017 (1968).

(10) Slade, D. H. (editor): Meteorology and Atomic Energy 1968, USAEC (1968).

Figure 1. - Relationships of emission density, area source size, and carbon monoxide concentrations



[38 FR 15836, June 18, 1973]

APPENDIX P—MINIMUM EMISSION MONITORING REQUIREMENTS

1.0 Purpose. This Appendix P sets forth the minimum requirements for continuous emission monitoring and recording that each State Implementation Plan must include in order to be approved under the provisions of 40 CFR 51.19(e). These requirements include the source categories to be affected; emission monitoring, recording, and reporting requirements for those sources; performance specifications for accuracy, reliability, and durability of acceptable monitoring systems; and techniques to convert emission data to units of the applicable State emission stand-

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ard. Such data must be reported to the State as an indication of whether proper maintenance and operating procedures are being utilized by source operators to maintain emission levels at or below emission standards. Such data may be used directly or indirectly for compliance determination or any other purpose deemed appropriate by the State. Though the monitoring requirements are specified in detail, States are given some flexibility to resolve difficulties that may arise during the implementation of these regulations.

1.1 *Applicability.*

The State plan shall require the owner or operator of an emission source in a category listed in this Appendix to: (1) install, calibrate, operate, and maintain all monitoring equipment necessary for continuously monitoring the pollutants specified in this Appendix for the applicable source category; and (2) complete the installation and performance tests of such equipment and begin monitoring and recording within 18 months of plan approval or promulgation. The source categories and the respective monitoring requirements are listed below.

1.1.1 Fossil fuel-fired steam generators, as specified in paragraph 2.1 of this appendix, shall be monitored for opacity, nitrogen oxides emissions, sulfur dioxide emissions, and oxygen or carbon dioxide.

1.1.2 Fluid bed catalytic cracking unit catalyst regenerators, as specified in paragraph 2.4 of this appendix, shall be monitored for opacity.

1.1.3 Sulfuric acid plants, as specified in paragraph 2.3 of this appendix, shall be monitored for sulfur dioxide emissions.

1.1.4 Nitric acid plants, as specified in paragraph 2.2 of this appendix, shall be monitored for nitrogen oxides emissions.

1.2 *Exemptions.*

The States may include provisions within their regulations to grant exemptions from the monitoring requirements of paragraph 1.1 of this appendix for any source which is:

1.2.1 subject to a new source performance standard promulgated in 40 CFR Part 60 pursuant to Section 111 of the Clean Air Act; or

1.2.2 not subject to an applicable emission standard of an approved plan; or

1.2.3 scheduled for retirement within 5 years after inclusion of monitoring requirements for the source in Appendix P, provided that adequate evidence and guarantees are provided that clearly show that the source will cease operations prior to such date.

1.3 *Extensions.*

States may allow reasonable extensions of the time provided for installation of monitors for facilities unable to meet the prescribed timeframe (i.e., 18 months from plan approval or promulgation) provided the owner or operator of such facility demonstrates that good faith efforts have been made to obtain and install such devices within such prescribed timeframe.

1.4 *Monitoring System Malfunction.*

The State plan may provide a temporary exemption from the monitoring and reporting requirements of this appendix during any period of monitoring system malfunction, provided that the source owner or operator shows, to the satisfaction of the State, that the malfunction was unavoidable and is being repaired as expeditiously as practicable.

2.0 *Minimum Monitoring Requirement.*

States must, as a minimum, require the sources listed in paragraph 1.1 of this appendix to meet the following basic requirements.

2.1 *Fossil fuel-fired steam generators.*

Each fossil fuel-fired steam generator, except as provided in the following subparagraphs, with an annual average capacity factor of greater than 30 percent, as reported to the Federal Power Commission for calendar year 1974, or as otherwise demonstrated to the State by the owner or operator, shall conform with the following monitoring requirements when such facility is subject to an emission standard of an applicable plan for the pollutant in question.

2.1.1 A continuous monitoring system for the measurement of opacity which meets the performance specifications of paragraph 3.1.1 of this appendix shall be installed, calibrated, maintained, and operated in accordance with the procedures of this appendix by the owner or operator of any such steam generator of greater than 250 million BTU per hour heat input except where:

2.1.1.1 gaseous fuel is the only fuel burned, or

2.1.1.2 oil or a mixture of gas and oil are the only fuels burned and the source is able to comply with the applicable particulate matter and opacity regulations without utilization of particulate matter collection equipment, and where the source has never been found, through any administrative or judicial proceedings, to be in violation of any visible emission standard of the applicable plan.

2.1.2 A continuous monitoring system for the measurement of sulfur dioxide which meets the performance specifications of paragraph 3.1.3 of this appendix shall be installed, calibrated, maintained, and operated on any fossil fuel-fired steam generator of greater than 250 million BTU per hour heat input which has installed sulfur dioxide pollutant control equipment.

2.1.3 A continuous monitoring system for the measurement of nitrogen oxides which meets the performance specification of paragraph 3.1.2 of this appendix shall be installed, calibrated, maintained, and operated on fossil fuel-fired steam generators of greater than 1000 million BTU per hour heat input when such facility is located in an Air Quality Control Region where the Administrator has specifically determined that a control strategy for nitrogen dioxide is necessary to attain the national standards, unless the source owner or operator demonstrates during source compliance tests as required by

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the State that such a source emits nitrogen oxides at levels 30 percent or more below the emission standard within the applicable plan.

2.1.4 A continuous monitoring system for the measurement of the percent oxygen or carbon dioxide which meets the performance specifications of paragraphs 3.1.4 or 3.1.5 of this appendix shall be installed, calibrated, operated, and maintained on fossil fuel-fired steam generators where measurements of oxygen or carbon dioxide in the flue gas are required to convert either sulfur dioxide or nitrogen oxides continuous emission monitoring data, or both, to units of the emission standard within the applicable plan.

2.2 *Nitric acid plants.*

Each nitric acid plant of greater than 300 tons per day production capacity, the production capacity being expressed as 100 percent acid, located in an Air Quality Control Region where the Administrator has specifically determined that a control strategy for nitrogen dioxide is necessary to attain the national standard shall install, calibrate, maintain, and operate a continuous monitoring system for the measurement of nitrogen oxides which meets the performance specifications of paragraph 3.1.2 for each nitric acid producing facility within such plant.

2.3 *Sulfuric acid plants.*

Each Sulfuric acid plant of greater than 300 tons per day production capacity, the production being expressed as 100 percent acid, shall install, calibrate, maintain and operate a continuous monitoring system for the measurement of sulfur dioxide which meets the performance specifications of 3.1.3 for each sulfuric acid producing facility within such plant.

2.4 *Fluid bed catalytic cracking unit catalyst regenerators at petroleum refineries.*

Each catalyst regenerator for fluid bed catalytic cracking units of greater than 20,000 barrels per day fresh feed capacity shall install, calibrate, maintain, and operate a continuous monitoring system for the measurement of opacity which meets the performance specifications of 3.1.1.

3.0 *Minimum specifications.*

All State plans shall require owners or operators of monitoring equipment installed to comply with this Appendix, except as provided in paragraph 3.2, to demonstrate compliance with the following performance specifications.

3.1 *Performance specifications.*

The performance specifications set forth in Appendix B of Part 60 are incorporated herein by reference, and shall be used by States to determine acceptability of monitoring equipment installed pursuant to this Appendix except that (1) where reference is made to the "Administrator" in Appendix B, Part 60, the term "State" should be inserted for the purpose of this Appendix (e.g., in Performance Specification 1, 1.2, " * * * monitoring systems subject to approval by the *Administrator*," should be interpreted as, "* * * monitoring systems subject to approval by the *State*"), and (2) where reference is made to the "Reference Method" in Appendix B, Part 60, the State may allow the use of either the State approved reference method or the Federally approved reference method as published in Part 60 of this Chapter. The Performance Specifications to be used with each type of monitoring system are listed below.

3.1.1 Continuous monitoring systems for measuring opacity shall comply with Performance Specification 1.

3.1.2 Continuous monitoring systems for measuring nitrogen oxides shall comply with Performance Specification 2.

3.1.3 Continuous monitoring systems for measuring sulfur dioxide shall comply with Performance Specification 2.

3.1.4 Continuous monitoring systems for measuring oxygen shall comply with Performance Specification 3.

3.1.5 Continuous monitoring systems for measuring carbon dioxide shall comply with Performance Specification 3.

3.2 *Exemptions.*

Any source which has purchased an emission monitoring system(s) prior to September 11, 1974, may be exempt from meeting such test procedures prescribed in Appendix B of Part 60 for a period not to exceed five years from plan approval or promulgation.

3.3 *Calibration Gases.*

For nitrogen oxides monitoring systems installed on fossil fuel-fired steam generators the pollutant gas used to prepare calibration gas mixtures (Section 2.1, Performance Specification 2, Appendix B, Part 60) shall be nitric oxide (NO). For nitrogen oxides monitoring systems, installed on nitric acid plants the pollutant gas used to prepare calibration gas mixtures (Section 2.1, Performance Specification 2, Appendix B, Part 60 of this Chapter) shall be nitrogen dioxide (NO_2). These gases shall also be used for daily checks under paragraph 3.7 of this appendix as applicable. For sulfur dioxide monitoring systems installed on fossil fuel-fired steam generators or sulfuric acid plants the pollutant gas used to prepare calibration gas mixtures (Section 2.1, Performance Specification 2, Appendix B, Part 60 of this Chapter) shall be sulfur dioxide (SO_2). Span and zero gases should be traceable to National Bureau of Standards reference gases whenever these reference gases are available. Every six months from date of manufacture, span and zero gases shall be reanalyzed by conducting triplicate analyses using the reference methods in Appendix A, Part 60 of this chapter as follows: for sulfur dioxide, use Reference Method 6; for nitrogen oxides, use Reference Method 7; and for carbon dioxide or oxygen, use Reference Method 3. The gases may be analyzed at less frequent intervals if longer shelf lives are guaranteed by the manufacturer.

3.4 *Cycling times.*

Cycling times include the total time a monitoring system requires to sample, analyze and record an emission measurement.

3.4.1 Continuous monitoring systems for measuring opacity shall complete a minimum of one cycle of operation (sampling, analyzing, and data recording) for each successive 10-second period.

3.4.2 Continuous monitoring systems for measuring oxides of nitrogen, carbon dioxide, oxygen, or sulfur dioxide shall complete a minimum of one cycle of operation (sampling, analyzing, and data recording) for each successive 15-minute period.

3.5 *Monitor location.*

State plans shall require all continuous monitoring systems or monitoring devices to be installed such that representative measurements of emissions or process parameters (i.e., oxygen, or carbon dioxide) from the affected facility are obtained. Additional guidance for location of continuous monitoring systems to obtain representative samples are contained in the applicable Performance Specifications of Appendix B of Part 60 of this Chapter.

3.6 *Combined effluents.*

When the effluents from two or more affected facilities of similar design and operating characteristics are combined before being released to the atmosphere, the State plan may allow monitoring systems to be installed on the combined effluent. When the affected facilities are not of similar design and operating characteristics, or when the effluent from one affected facility is released to the atmosphere through more than one point, the State should establish alternate procedures to implement the intent of these requirements.

3.7 *Zero and drift.*

State plans shall require owners or operators of all continuous monitoring systems installed in accordance with the requirements of this Appendix to record the zero and span drift in accordance with the method prescribed by the manufacturer of such instruments; to subject the instruments to the manufacturer's recommended zero and span check at least once daily unless the manufacturer has recommended adjustments at shorter intervals, in which case such recommendations shall be followed; to adjust the zero and span whenever the 24-hour zero drift or 24-hour calibration drift limits of the applicable performance specifications in Appendix B of Part 60 are exceeded; and to adjust continuous monitoring systems referenced by paragraph 3.2 of this Appendix whenever the 24-hour zero drift or 24-hour calibration drift exceed 10 percent of the emission standard.

3.8 *Span.*

Instrument span should be approximately 200 per cent of the expected instrument data display output corresponding to the emission standard for the source.

3.9 *Alternative procedures and requirements.*

In cases where States wish to utilize different, but equivalent, procedures and requirements for continuous monitoring systems, the State plan must provide a description of such alternative proceduers for approval by the Administrator. Some examples of situations that may require alternatives follow:

3.9.1 Alternative monitoring requirements to accommodate continuous monitoring systems that require corrections for stack moisture conditions (e.g., an instrument measuring steam generator SO_2 emissions on a wet basis could be used with an instrument measuring oxygen concentration on a dry basis if acceptable methods of measuring stack moisture conditions are used to allow accurate adjustment of the measured SO_2 concentration to dry basis.)

3.9.2 Alternative locations for installing continuous monitoring systems or monitoring devices when the owner or operator can demonstrate that installation at alternative locations will enable accurate and representative measurements.

3.9.3 Alternative procedures for performing calibration checks (e.g., some instruments may demonstrate superior drift characteristics that require checking at less frequent intervals).

3.9.4 Alternative monitoring requirements when the effluent from one affected facility or the combined effluent from two or more identical affected facilities is released to the atmosphere through more than one point (e.g., an extractive, gaseous monitoring system used at several points may be approved if the procedures recommended are suitable for generating accurate emission averages).

3.9.5 Alternative continuous monitoring systems that do not meet the spectral response requirements in Performance Specification 1, Appendix B of Part 60, but adequately demonstrate a definite and consistent relationship between their measurements and the opacity measurements of a system complying with the requirements in Performance Specification 1. The State may require that such demonstration be performed for each affected facility.

4.0 *Minimum data requirements.*

The following paragraphs set forth the minimum data reporting requirements necessary to comply with § 51.19(e) (3) and (4).

4.1 The State plan shall require owners or operators of facilities required to install continuous monitoring systems to submit a written report of excess emissions for each calendar quarter and the nature and cause of the excess emissions, if known. The averaging period used for data reporting should be established by the State to correspond to the averaging period specified in the emission test method used to determine compliance with an emission standard for the pollutant/source category in question. The required report shall include, as a minimum, the data stipulated in this Appendix.

4.2 For opacity measurements, the summary shall consist of the magnitude in actual percent opacity of all one-minute (or such

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other time period deemed appropriate by the State) averages of opacity greater than the opacity standard in the applicable plan for each hour of operation of the facility. Average values may be obtained by integration over the averaging period or by arithmetically averaging a minimum of four equally spaced, instantaneous opacity measurements per minute. Any time period exempted shall be considered before determining the excess averages of opacity (e.g., whenever a regulation allows two minutes of opacity measurements in excess of the standard, the State shall require the source to report all opacity averages, in any one hour, in excess of the standard, minus the two-minute exemption). If more than one opacity standard applies, excess emissions data must be submitted in relation to all such standards.

4.3 For gaseous measurements the summary shall consist of emission averages, in the units of the applicable standard, for each averaging period during which the applicable standard was exceeded.

4.4 The date and time identifying each period during which the continuous monitoring system was inoperative, except for zero and span checks, and the nature of system repairs or adjustments shall be reported. The State may require proof of continuous monitoring system performance whenever system repairs or adjustments have been made.

4.5 When no excess emissions have occurred and the continuous monitoring system(s) have not been inoperative, repaired, or adjusted, such information shall be included in the report.

4.6 The State plan shall require owners or operators of affected facilities to maintain a file of all information reported in the quarterly summaries, and all other data collected either by the continuous monitoring system or as necessary to convert monitoring data to the units of the applicable standard for a minimum of two years from the date of collection of such data or submission of such summaries.

5.0 *Data Reduction.*

The State plan shall require owners or operators of affected facilities to use the following procedures for converting monitoring data to units of the standard where necessary.

5.1 For fossil fuel-fired steam generators the following procedures shall be used to convert gaseous emission monitoring data in parts per million to g/million cal (lb/million BTU) where necessary:

5.1.1 When the owner or operator of a fossil fuel-fired steam generator elects under subparagraph 2.1.4 of this Appendix to measure oxygen in the flue gases, the measurements of the pollutant concentration and oxygen concentration shall each be on a dry basis and the following conversion procedure used:

$$E=CF\left(\frac{20.9}{20.9-\%O_2}\right)$$

5.1.2 When the owner or operator elects under subparagraph 2.1.4 of this Appendix to measure carbon dioxide in the flue gases, the measurement of the pollutant concentration and the carbon dioxide concentration shall each be on a consistent basis (wet or dry) and the following conversion procedure used:

$$E=CF_c\left(\frac{100}{\%\ CO_2}\right)$$

5.1.3 The values used in the equations under paragraph 5.1 are derived as follows:

E=pollutant emission, g/million cal (lb/million BTU),

C=pollutant concentration, g/dscm (lb/dscf), determined by multiplying the average concentration (ppm) for each hourly period by 4.16×10^{-5} M g/dscm per ppm (2.64×10^{-9} M lb/dscf per ppm) where M = pollutant molecular weight, g/g-mole (lb/lb-mole). M = 64 for sulfur dioxide and 46 for oxides of nitrogen.

$\%O_2$, $\%CO_2$=Oxygen or carbon dioxide volume (expressed as percent) determined with equipment specified under paragraph 4.1.4 of this appendix.

F, F_c=a factor representing a ratio of the volume of dry flue gases generated to the calorific value of the fuel combusted (F), and a factor representing a ratio of the volume of carbon dioxide generated to the calorific value of the fuel combusted (F_c) respectively. Values of F and F_c are given in § 60.45(f) of Part 60, as applicable.

5.2 For sulfuric acid plants the owner or operator shall;

5.2.1 establish a conversion factor three times daily according to the procedures to § 60.84(b) of this chapter;

5.2.2 multiply the conversion factor by the average sulfur dioxide concentration in the flue gases to obtain average sulfur dioxide emissions in Kg/metric ton (lb/short ton); and

5.2.3 report the average sulfur dioxide emission for each averaging period in excess of the applicable emission standard in the quarterly summary.

5.3 For nitric acid plants the owner or operator shall;

5.3.1 establish a conversion factor according to the procedures of § 60.73(b) of this chapter.

5.3.2 multiply the conversion factor by the average nitrogen oxides concentration in the flue gases to obtain the nitrogen oxides emissions in the units of the applicable standard;

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5.3.3 report the average nitrogen oxides emission for each averaging period in excess of the applicable emission standard, in the quarterly summary.

5.4 Any State may allow data reporting or reduction procedures varying from those set forth in this Appendix if the owner or operator of a source shows to the satisfaction of the State that his procedures are at least as accurate as those in this Appendix. Such procedures may include but are not limited to, the following:

5.4.1 Alternative procedures for computing emission averages that do not require integration of data (e.g., some facilities may demonstrate that the variability of their emissions is sufficiently small to allow accurate reduction of data based upon computing averages from equally spaced data points over the averaging period).

5.4.2 Alternative methods of converting pollutant concentration measurements to the units of the emission standards.

6.0 *Special Consideration.*

The State plan may provide for approval, on a case-by-case basis, of alternative monitoring requirements different from the provisions of Parts 1 through 5 of this Appendix if the provisions of this Appendix (i.e., the installation of a continuous emission monitoring system) cannot be implemented by a source due to physical plant limitations or extreme economic reasons. To make use of this provision, States must include in their plan specific criteria for determining those physical limitations or extreme economic situations to be considered by the State. In such cases, when the State exempts any source subject to this Appendix by use of this provision from installing continuous emission monitoring systems, the State shall set forth alternative emission monitoring and reporting requirements (e.g., periodic manual stack tests) to satisfy the intent of these regulations. Examples of such special cases include, but are not limited to, the following:

6.1 Alternative monitoring requirements may be prescribed when installation of a continuous monitoring system or monitoring device specified by this Appendix would not provide accurate determinations of emissions (e.g., condensed, uncombined water vapor may prevent an accurate determination of opacity using commercially available continuous monitoring systems).

6.2 Alternative monitoring requirements may be prescribed when the affected facility is infrequently operated (e.g., some affected facilities may operate less than one month per year).

6.3 Alternative monitoring requirements may be prescribed when the State determines that the requirements of this Appendix would impose an extreme economic burden on the source owner or operator.

6.4 Alternative monitoring requirements may be prescribed when the State determines that monitoring systems prescribed by this Appendix cannot be installed due to physical limitations at the facility.

[40 FR 46247, Oct. 6, 1975]

APPENDIX Q [Reserved]

APPENDIX R.—*Agency functions for air quality maintenance area plans for the ______ AQMA in the State of ______ for the year ______*

Control measures	Agencies[1]	State air pollution control agencies	Local air pollution control agencies	Implementation plan review agencies (A-95, 3-C)	Planning agencies	Transportation agencies	Other (water control, public works, etc.)
FUND ESTIMATES BY FUNCTION							
Measure a							
Measure b							
Measure m							
Total funds[2]							
MAN-YEAR ESTIMATES BY FUNCTION							
Measure a							
Measure b							
Measure m							
Total							

[1] Specific agencies should be identified in a narrative attachment.
[2] Report funds in thousands of dollars.

[41 FR 18391, May 3, 1976]

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available to the Administrator which may include, but is not limited to, monitoring results, opacity observations, review of operating and maintenance procedures, and inspection of the source.

(e) (1) An owner or operator of an affected facility may request the Administrator to determine opacity of emissions from the affected facility during the initial performance tests required by § 60.8.

(2) Upon receipt from such owner or operator of the written report of the results of the performance tests required by § 60.8, the Administrator will make a finding concerning compliance with opacity and other applicable standards. If the Administrator finds that an affected facility is in compliance with all applicable standards for which performance tests are conducted in accordance with § 60.8 of this part but during the time such performance tests are being conducted fails to meet any applicable opacity standard, he shall notify the owner or operator and advise him that he may petition the Administrator within 10 days of receipt of notification to make appropriate adjustment to the opacity standard for the affected facility.

(3) The Administrator will grant such a petition upon a demonstration by the owner or operator that the affected facility and associated air pollution control equipment was operated and maintained in a manner to minimize the opacity of emissions during the performance tests; that the performance tests were performed under the conditions established by the Administrator; and that the affected facility and associated air pollution control equipment were incapable of being adjusted or operated to meet the applicable opacity standard.

(4) The Administrator will establish an opacity standard for the affected facility meeting the above requirements at a level at which the source will be able, as indicated by the performance and opacity tests, to meet the opacity standard at all times during which the source is meeting the mass or concentration emission standard. The Administrator will promulgate the new opacity standard in the FEDERAL REGISTER.

[38 FR 28565, Oct. 15, 1974, as amended at 39 FR 39873, Nov. 12, 1974; 42 FR 26206, May 23, 1977]

§ 60.12 Circumvention.

No owner or operator subject to the provisions of this part shall build, erect, install, or use any article, machine, equipment or process, the use of which conceals an emission which would otherwise constitute a violation of an applicable standard. Such concealment includes, but is not limited to, the use of gaseous diluents to achieve compliance with an opacity standard or with a standard which is based on the concentration of a pollutant in the gases discharged to the atmosphere.

[39 FR 9314, Mar. 8, 1974]

§ 60.13 Monitoring requirements.

(a) Unless otherwise approved by the Administrator or specified in applicable subparts, the requirements of this section shall apply to all continuous monitoring systems required under applicable subparts.

(b) All continuous monitoring systems and monitoring devices shall be installed and operational prior to conducting performance tests under § 60.8. Verification of operational status shall, as a minimum, consist of the following:

(1) For continuous monitoring systems referenced in paragraph (c) (1) of this section, completion of the conditioning period specified by applicable requirements in Appendix B.

(2) For continuous monitoring systems referenced in paragraph (c) (2) of this section, completion of seven days of operation.

(3) For monitoring devices referenced in applicable subparts, completion of the manufacturer's written requirements or recommendations for checking the operation or calibration of the device.

(c) During any performance tests required under § 60.8 or within 30 days thereafter and at such other times as may be required by the Administrator under section 114 of the Act, the owner or operator of any affected facility shall conduct continuous monitoring system performance evaluations and furnish the Administrator within 60 days thereof two or, upon request, more copies of a written report of the results of such tests. These continuous monitoring system performance evaluations shall be conducted in accordance with the following specifications and procedures:

(1) Continuous monitoring systems listed within this paragraph except as provided in paragraph (c) (2) of this section shall be evaluated in accordance with the requirements and procedures contained in the applicable perform-

ance specification of Appendix B as follows:

(i) Continuous monitoring systems for measuring opacity of emissions shall comply with Performance Specification 1.

(ii) Continuous monitoring systems for measuring nitrogen oxides emissions shall comply with Performance Specification 2.

(iii) Continuous monitoring systems for measuring sulfur dioxide emissions shall comply with Performance Specification 2.

(iv) Continuous monitoring systems for measuring the oxygen content or carbon dioxide content of effluent gases shall comply with Performance Specification 3.

(2) An owner or operator who, prior to September 11, 1974, entered into a binding contractual obligation to purchase specific continuous monitoring system components except as referenced by paragraph (c)(2)(iii) of this section shall comply with the following requirements:

(i) Continuous monitoring systems for measuring opacity of emissions shall be capable of measuring emission levels within ±20 percent with a confidence level of 95 percent. The Calibration Error Test and associated calculation procedures set forth in Performance Specification 1 of Appendix B shall be used for demonstrating compliance with this specification.

(ii) Continuous monitoring systems for measurement of nitrogen oxides or sulfur dioxide shall be capable of measuring emission levels within ±20 percent with a confidence level of 95 percent. The Calibration Error Test, the Field Test for Accuracy (Relative), and associated operating and calculation procedures set forth in Performance Specification 2 of Appendix B shall be used for demonstrating compliance with this specification.

(iii) Owners or operators of all continuous monitoring systems installed on an affected facility prior to October 6, 1975 are not required to conduct tests under paragraphs (c)(2)(i) and/or (ii) of this section unless requested by the Administrator.

(3) All continuous monitoring systems referenced by paragraph (c)(2) of this section shall be upgraded or replaced (if necessary) with new continuous monitoring systems, and the new or improved systems shall be demonstrated to comply with applicable performance specifications under paragraph (c)(1) of this section on or before September 11, 1979.

(d) Owners or operators of all continuous monitoring systems installed in accordance with the provisions of this part shall check the zero and span drift at least once daily in accordance with the method prescribed by the manufacturer of such systems unless the manufacturer recommends adjustments at shorter intervals, in which case such recommendations shall be followed. The zero and span shall, as a minimum, be adjusted whenever the 24-hour zero drift or 24-hour calibration drift limits of the applicable performance specifications in Appendix B are exceeded. For continuous monitoring systems measuring opacity of emissions, the optical surfaces exposed to the effluent gases shall be cleaned prior to performing the zero or span drift adjustments except that for systems using automatic zero adjustments, the optical surfaces shall be cleaned when the cumulative automatic zero compensation exceeds four percent opacity. Unless otherwise approved by the Administrator, the following procedures, as applicable, shall be followed:

(1) For extractive continuous monitoring systems measuring gases, minimum procedures shall include introducing applicable zero and span gas mixtures into the measurement system as near the probe as is practical. Span and zero gases certified by their manufacturer to be traceable to National Bureau of Standards reference gases shall be used whenever these reference gases are available. The span and zero gas mixtures shall be the same composition as specified in Appendix B of this part. Every six months from date of manufacture, span and zero gases shall be reanalyzed by conducting triplicate analyses with Reference Methods 6 for SO_2, 7 for NO_x, and 3 for O_2 and CO_2, respectively. The gases may be analyzed at less frequent intervals if longer shelf lives are guaranteed by the manufacturer.

(2) For non-extractive continuous monitoring systems measuring gases, minimum procedures shall include upscale check(s) using a certified calibration gas cell or test cell which is functionally equivalent to a known gas concentration. The zero check may be performed by computing the zero value from upscale measurements or by mechanically producing a zero condition.

(3) For continuous monitoring systems measuring opacity of emissions, mini-

mum procedures shall include a method for producing a simulated zero opacity condition and an upscale (span) opacity condition using a certified neutral density filter or other related technique to produce a known obscuration of the light beam. Such procedures shall provide a system check of the analyzer internal optical surfaces and all electronic circuitry including the lamp and photodetector assembly.

(e) Except for system breakdowns, repairs, calibration checks, and zero and span adjustments required under paragraph (d) of this section, all continuous monitoring systems shall be in continuous operation and shall meet minimum frequency of operation requirements as follows:

(1) All continuous monitoring systems referenced by paragraphs (c)(1) and (c)(2) of this section for measuring opacity of emissions shall complete a minimum of one cycle of sampling and analyzing for each successive ten-second period and one cycle of data recording for each successive six-minute period.

(2) All continuous monitoring systems referenced by paragraph (c)(1) of this section for measuring oxides of nitrogen, sulfur dioxide, carbon dioxide, or oxygen shall complete a minimum of one cycle of operation (sampling, analyzing, and data recording) for each successive 15-minute period.

(3) All continuous monitoring systems referenced by paragraph (c)(2) of this section, except opacity, shall complete a minimum of one cycle of operation (sampling, analyzing, and data recording) for each successive one-hour period.

(f) All continuous monitoring systems or monitoring devices shall be installed such that representative measurements of emissions or process parameters from the affected facility are obtained. Additional procedures for location of continuous monitoring systems contained in the applicable Performance Specifications of Appendix B of this part shall be used.

(g) When the effluents from a single affected facility or two or more affected facilities subject to the same emission standards are combined before being released to the atmosphere, the owner or operator may install applicable continuous monitoring systems on each effluent or on the combined effluent. When the affected facilities are not subject to the same emission standards, separate continuous monitoring systems shall be installed on each effluent. When the effluent from one affected facility is released to the atmosphere through more than one point, the owner or operator shall install applicable continuous monitoring systems on each separate effluent unless the installation of fewer systems is approved by the Administrator.

(h) Owners or operators of all continuous monitoring systems for measurement of opacity shall reduce all data to six-minute averages and for systems other than opacity to one-hour averages for time periods under § 60.2 (x) and (r) respectively. Six-minute opacity averages shall be calculated from 24 or more data points equally spaced over each six-minute period. For systems other than opacity, one-hour averages shall be computed from four or more data points equally spaced over each one-hour period. Data recorded during periods of system breakdowns, repairs, calibration checks, and zero and span adjustments shall not be included in the data averages computed under this paragraph. An arithmetic or integrated average of all data may be used. The data output of all continuous monitoring systems may be recorded in reduced or nonreduced form (e.g. ppm pollutant and percent O_2 or 1b/million Btu of pollutant). All excess emissions shall be converted into units of the standard using the applicable conversion procedures specified in subparts. After conversion into units of the standard, the data may be rounded to the same number of significant digits used in subparts to specify the applicable standard (e.g., rounded to the nearest one percent opacity).

(i) After receipt and consideration of written application, the Administrator may approve alternatives to any monitoring procedures or requirements of this part including, but not limited to the following:

(1) Alternative monitoring requirements when installation of a continuous monitoring system or monitoring device specified by this part would not provide accurate measurements due to liquid water or other interferences caused by substances with the effluent gases.

(2) Alternative monitoring requirements when the affected facility is infrequently operated.

(3) Alternative monitoring requirements to accommodate continuous monitoring systems that require additional

measurements to correct for stack moisture conditions.

(4) Alternative locations for installing continuous monitoring systems or monitoring devices when the owner or operator can demonstrate that installation at alternate locations will enable accurate and representative measurements.

(5) Alternative methods of converting pollutant concentration measurements to units of the standards.

(6) Alternative procedures for performing daily checks of zero and span drift that do not involve use of span gases or test cells.

(7) Alternatives to the A.S.T.M. test methods or sampling procedures specified by any subpart.

(8) Alternative continuous monitoring systems that do not meet the design or performance requirements in Performance Specification 1, Appendix B, but adequately demonstrate a definite and consistent relationship between its measurements and the measurements of opacity by a system complying with the requirements in Performance Specification 1. The Administrator may require that such demonstration be performed for each affected facility.

(9) Alternative monitoring requirements when the effluent from a single affected facility or the combined effluent from two or more affected facilities are released to the atmosphere through more than one point.

[40 FR 46255, Oct. 6, 1975; 40 FR 59205, Dec. 22, 1975, as amended at 41 FR 35185, Aug. 20, 1976; 42 FR 5936, Jan. 31, 1977]

§ 60.14 Modification.

(a) Except as provided under paragraphs (d), (e) and (f) of this section, any physical or operational change to an existing facility which results in an increase in the emission rate to the atmosphere of any pollutant to which a standard applies shall be considered a modification within the meaning of section 111 of the Act. Upon modification, an existing facility shall become an affected facility for each pollutant to which a standard applies and for which there is an increase in the emission rate to the atmosphere.

(b) Emission rate shall be expressed as kg/hr of any pollutant discharged into the atmosphere for which a standard is applicable. The Administrator shall use the following to determine emission rate:

(1) Emission factors as specified in the latest issue of "Compilation of Air Pollutant Emission Factors," EPA Publication No. AP-42, or other emission factors determined by the Administrator to be superior to AP-42 emission factors, in cases where utilization of emission factors demonstrate that the emission level resulting from the physical or operational change will either clearly increase or clearly not increase.

(2) Material balances, continuous monitor data, or manual emission tests in cases where utilization of emission factors as referenced in paragraph (b)(1) of this section does not demonstrate to the Administrator's satisfaction whether the emission level resulting from the physical or operational change will either clearly increase or clearly not increase, or where an owner or operator demonstrates to the Administrator's satisfaction that there are reasonable grounds to dispute the result obtained by the Administrator utilizing emission factors as referenced in paragraph (b)(1) of this section. When the emission rate is based on results from manual emission tests or continuous monitoring systems, the procedures specified in Appendix C of this part shall be used to determine whether an increase in emission rate has occurred. Tests shall be conducted under such conditions as the Administrator shall specify to the owner or operator based on representative performance of the facility. At least three valid test runs must be conducted before and at least three after the physical or operational change. All operating parameters which may affect emissions must be held constant to the maximum feasible degree for all test runs.

(c) The addition of an affected facility to a stationary source as an expansion to that source or as a replacement for an existing facility shall not by itself bring within the applicability of this part any other facility within that source.

(d) A modification shall not be deemed to occur if an existing facility undergoes a physical or operational change where the owner or operator demonstrates to the Administrator's satisfaction (by any of the procedures prescribed under paragraph (b) of this section) that the total emission rate of any pollutant has not increased from all facilities within the stationary source to which appropriate reference, equivalent, or alternative methods, as defined in § 60.2 (s), (t) and (u), can be applied. An owner or operator may completely and permanently close

B_{ws}—is the proportion by volume of water vapor in the gas stream, from Equation 13A-3, Method 13A—Determination of total fluoride emissions from stationary sources.

[36 FR 24877, Dec. 23, 1971, as amended at 38 FR 13562, May 23, 1973; 39 FR 9319, Mar. 8, 1974; 39 FR 13776, Apr. 17, 1974; 39 FR 20794, June 14, 1974; 39 FR 39874, Nov. 12, 1974; 40 FR 33157, Aug. 6, 1975; 41 FR 3828, Jan. 26, 1976; 41 FR 52299, Nov. 29, 1976]

APPENDIX B—PERFORMANCE SPECIFICATIONS

Performance Specification 1—Performance specifications and specification test procedures for transmissometer systems for continuous measurement of the opacity of stack emissions.

1. Principle and Applicability.

1.1 Principle. The opacity of particulate matter in stack emissions is measured by a continuously operating emission measurement system. These systems are based upon the principle of transmissometry which is a direct measurement of the attenuation of visible radiation (opacity) by particulate matter in a stack effluent. Light having specific spectral characteristics is projected from a lamp across the stack of a pollutant source to a light sensor. The light is attenuated due to absorption and scatter by the particulate matter in the effluent. The percentage of visible light attenuated is defined as the opacity of the emission. Transparent stack emissions that do not attenuate light will have a transmittance of 100 or an opacity of 0. Opaque stack emissions that attenuate all of the visible light will have a transmittance of 0 or an opacity of 100 percent. The transmissometer is evaluated by use of neutral density filters to determine the precision of the continuous monitoring system. Tests of the system are performed to determine zero drift, calibration drift, and response time characteristics of the system.

1.2 Applicability. This performance specification is applicable to the continuous monitoring systems specified in the subparts for measuring opacity of emissions. Specifications for continuous measurement of visible emissions are given in terms of design, performance, and installation parameters. These specifications contain test procedures, installation requirements, and data computation procedures for evaluating the acceptability of the continuous monitoring systems subject to approval by the Administrator.

2. Apparatus.

2.1 Calibrated Filters. Optical filters with neutral spectral characteristics and known optical densities to visible light or screens known to produce specified optical densities. Calibrated filters with accuracies certified by the manufacturer to within ±3 percent opacity shall be used. Filters required are low, mid, and high-range filters with nominal optical densities as follows when the transmissometer is spanned at opacity levels specified by applicable subparts:

Span value (percent opacity)	Calibrated filter optical densities with equivalent opacity in parenthesis		
	Low-range	Mid-range	High-range
50	0.1 (20)	0.2 (37)	0.3 (50)
60	.1 (20)	.2 (37)	.3 (50)
70	.1 (20)	.3 (50)	.4 (60)
80	.1 (20)	.3 (50)	.6 (75)
90	.1 (20)	.4 (60)	.7 (80)
100	.1 (20)	.4 (60)	.9 (87½)

It is recommended that filter calibrations be checked with a well-collimated photopic transmissometer of known linearity prior to use. The filters shall be of sufficient size to attenuate the entire light beam of the transmissometer.

2.2 Data Recorder. Analog chart recorder or other suitable device with input voltage range compatible with the analyzer system output. The resolution of the recorder's data output shall be sufficient to allow completion of the test procedures within this specification.

2.3 Opacity measurement System. An in-stack transmissometer (folded or single path) with the optical design specifications designated below, associated control units and apparatus to keep optical surfaces clean.

3. Definitions.

3.1 Continuous Monitoring System. The total equipment required for the determination of pollutant opacity in a source effluent. Continuous monitoring systems consist of major subsystems as follows:

3.1.1 Sampling Interface. The portion of a continuous monitoring system for opacity that protects the analyzer from the effluent.

3.1.2 Analyzer. That portion of the continuous monitoring system which senses the pollutant and generates a signal output that is a function of the pollutant opacity.

3.1.3 Data Recorder. That portion of the continuous monitoring system that processes the analyzer output and provides a permanent record of the output signal in terms of pollutant opacity.

3.2 Transmissometer. The portions of a continuous monitoring system for opacity that include the sampling interface and the analyzer.

3.3 Span. The value of opacity at which the continuous monitoring system is set to produce the maximum data display output. The span shall be set at an opacity specified in each applicable subpart.

3.4 Calibration Error. The difference between the opacity reading indicated by the continuous monitoring system and the known values of a series of test standards. For this method the test standards are a series of calibrated optical filters or screens.

3.5 Zero Drift. The change in continuous monitoring system output over a stated period of time of normal continuous operation when the pollutant concentration at the time of the measurements is zero.

3.6 Calibration Drift. The change in the continuous monitoring system output over a stated period of time of normal continuous operation when the pollutant concentration at the time of the measurements is the same known upscale value.

3.7 System Response. The time interval from a step change in opacity in the stack at the input to the continuous monitoring system to the time at which 95 percent of the corresponding final value is reached as displayed on the continuous monitoring system data recorder.

3.8 Operational Test Period. A minimum period of time over which a continuous monitoring system is expected to operate within certain performance specifications without unscheduled maintenance, repair, or adjustment.

3.9 Transmittance. The fraction of incident light that is transmitted through an optical medium of interest.

3.10 Opacity. The fraction of incident light that is attenuated by an optical medium of interest. Opacity (O) and transmittance (T) are related as follows:

$$O=1-T$$

3.11 Optical Density. A logarithmic measure of the amount of light that it attenuated by an optical medium of interest. Optical density (D) is related to the transmittance and opacity as follows:

$$D=-\log_{10}T$$

$$D=-\log_{10}(1-O)$$

3.12 Peak Optical Response. The wavelength of maximum sensitivity of the instrument.

3.13 Mean Spectral Response. The wavelength which bisects the total area under the curve obtained pursuant to paragraph 9.2.1.

3.14 Angle of View. The maximum (total) angle of radiation detection by the photodetector assembly of the analyzer.

3.15 Angle of Projection. The maximum (total) angle that contains 95 percent of the radiation projected from the lamp assembly of the analyzer.

3.16 Pathlength. The depth of effluent in the light beam between the receiver and the transmitter of the single-pass transmissometer, or the depth of effluent between the transceiver and reflector of a double-pass transmissometer. Two pathlengths are referenced by this specification:

3.16.1 Monitor Pathlength. The depth of effluent at the installed location of the continuous monitoring system.

3.16.2 Emission Outlet Pathlength. The depth of effluent at the location emissions are released to the atmosphere.

4. Installation Specification.

4.1 Location. The transmissometer must be located across a section of duct or stack that will provide a particulate matter flow through the optical volume of the transmissometer that is representative of the particulate matter flow through the duct or stack. It is recommended that the monitor pathlength or depth of effluent for the transmissometer include the entire diameter of the duct or stack. In installations using a shorter pathlength, extra caution must be used in determining the measurement location representative of the particulate matter flow through the duct or stack.

4.1.1 The transmissometer location shall be downstream from all particulate control equipment.

4.1.2 The transmissometer shall be located as far from bends and obstructions as practical.

4.1.3 A transmissometer that is located in the duct or stack following a bend shall be installed in the plane defined by the bend where possible.

4.1.4 The transmissometer should be installed in an accessible location.

4.1.5 When required by the Administrator, the owner or operator of a source must demonstrate that the transmissometer is located in a section of duct or stack where a representative particulate matter distribution exists. The determination shall be accomplished by examining the opacity profile of the effluent at a series of positions across the duct or stack while the plant is in operation at maximum or reduced operating rates or by other tests acceptable to the Administrator.

4.2 Slotted Tube. Installations that require the use of a slotted tube shall use a slotted tube of sufficient size and blackness so as not to interfere with the free flow of effluent through the entire optical volume of the transmissometer or reflect light into the transmissometer photodetector. Light reflections may be prevented by using blackened baffles within the slotted tube to prevent the lamp radiation from impinging upon the tube walls, by restricting the angle of projection of the light and the angle of view of the photodetector assembly to less than the cross-sectional area of the slotted tube, or by other methods. The owner or operator must show that the manufacturer of the monitoring system has used appropriate methods to minimize light reflections for systems using slotted tubes.

4.3 Data Recorder Output. The continuous monitoring system output shall permit expanded display of the span opacity on a standard 0 to 100 percent scale. Since all opacity standards are based on the opacity of the effluent exhausted to the atmosphere, the system output shall be based upon the emission outlet pathlength and permanently recorded. For affected facilities whose monitor pathlength is different from the facility's emission outlet pathlength, a graph shall be provided with the installation to show the relationships between the continuous monitoring system recorded opacity based upon the emission outlet pathlength and the opac-

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ity of the effluent at the analyzer location (monitor pathlength). Tests for measurement of opacity that are required by this performance specification are based upon the monitor pathlength. The graph necessary to convert the data recorder output to the monitor pathlength basis shall be established as follows:

$$\log (1-O_1)=(l_1/l_2) \log (1-O_2)$$

where:

O_1=the opacity of the effluent based upon l_1.
O_2=the opacity of the effluent based upon l_2.
l_1=the emission outlet pathlength.
l_2=the monitor pathlength.

5. Optical Design Specifications.

The optical design specifications set forth in Section 6.1 shall be met in order for a measurement system to comply with the requirements of this method.

6. Determination of Conformance with Design Specifications.

6.1 The continuous monitoring system for measurement of opacity shall be demonstrated to conform to the design specifications set forth as follows:

6.1.1 Peak Spectral Response. The peak spectral response of the continuous monitoring systems shall occur between 500 nm and 600 nm. Response at any wavelength below 400 nm or above 700 nm shall be less than 10 percent of the peak response of the continuous monitoring system.

6.1.2 Mean Spectral Response. The mean spectral response of the continuous monitoring system shall occur between 500 nm and 600 nm.

6.1.3 Angle of View. The total angle of view shall be no greater than 5 degrees.

6.1.4 Angle of Projection. The total angle of projection shall be no greater than 5 degrees.

6.2 Conformance with the requirements of section 6.1 may be demonstrated by the owner or operator of the affected facility by testing each analyzer or by obtaining a certificate of conformance from the instrument manufacturer. The certificate must certify that at least one analyzer from each month's production was tested and satisfactorily met all applicable requirements. The certificate must state that the first analyzer randomly sampled met all requirements of paragraph 6 of this specification. If any of the requirements were not met, the certificate must show that the entire month's analyzer production was resampled according to the military standard 105D sampling procedure (MIL-STD-105D) inspection level II; was retested for each of the applicable requirements under paragraph 6 of this specification; and was determined to be acceptable under MIL-STD-105D procedures. The certificate of conformance must show the results of each test performed for the analyzers sampled during the month the analyzer being installed was produced.

6.3 The general test procedures to be followed to demonstrate conformance with Section 6 requirements are given as follows: (These procedures will not be applicable to all designs and will require modification in some cases. Where analyzer and optical design is certified by the manufacturer to conform with the angle of view or angle of projection specifications, the respective procedures may be omitted.)

6.3.1 Spectral Response. Obtain spectral data for detector, lamp, and filter components used in the measurement system from their respective manufacturers.

6.3.2 Angle of View. Set the receiver up as specified by the manufacturer. Draw an arc with radius of 3 meters. Measure the receiver response to a small (less than 3 centimeters) non-directional light source at 5-centimeter intervals on the arc for 26 centimeters on either side of the detector centerline. Repeat the test in the vertical direction.

6.3.3 Angle of Projection. Set the projector up as specified by the manufacturer. Draw an arc with radius of 3 meters. Using a small photoelectric light detector (less than 3 centimeters), measure the light intensity at 5-centimeter intervals on the arc for 26 centimeters on either side of the light source centerline of projection. Repeat the test in the vertical direction.

7. Continuous Monitoring System Performance Specifications.

The continuous monitoring system shall meet the performance specifications in Table 1-1 to be considered acceptable under this method.

TABLE 1-1.—*Performance specifications*

Parameter	*Specifications*
a. Calibration error	≤3 pct opacity.[1]
b. Zero drift (24 h)	≤2 pct opacity.[1]
c. Calibration drift (24 h)	≤2 pct opacity.[1]
d. Response time	10 s (maximum).
e. Operational test period	168 h.

[1] Expressed as sum of absolute mean value and the 95 pct confidence interval of a series of tests.

8. Performance Specification Test Procedures. The following test procedures shall be used to determine conformance with the requirements of paragraph 7:

8.1 Calibration Error and Response Time Test. These tests are to be performed prior to installation of the system on the stack and may be performed at the affected facility or at other locations provided that proper notification is given. Set up and calibrate the measurement system as specified by the manufacturer's written instructions for the monitor pathlength to be used in the installation. Span the analyzer as specified in applicable subparts.

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8.1.1 Calibration Error Test. Insert a series of calibration filters in the transmissometer path at the midpoint. A minimum of three calibration filters (low, mid, and high-range) selected in accordance with the table under paragraph 2.1 and calibrated within 3 percent must be used. Make a total of five nonconsecutive readings for each filter. Record the measurement system output readings in percent opacity. (See Figure 1–1.)

8.1.2 System Response Test. Insert the high-range filter in the transmissometer path five times and record the time required for the system to respond to 95 percent of final zero and high-range filter values. (See Figure 1–2.)

8.2 Field Test for Zero Drift and Calibration Drift. Install the continuous monitoring system on the affected facility and perform the following alignments:

8.2.1 Preliminary Alignments. As soon as possible after installation and once a year thereafter when the facility is not in operation, perform the following optical and zero alignments:

8.2.1.1 Optical Alignment. Align the light beam from the transmissometer upon the optical surfaces located across the effluent (i.e., the retroflector or photodetector as applicable) in accordance with the manufacturer's instructions.

8.2.1.2 Zero Alignment. After the transmissometer has been optically aligned and the transmissometer mounting is mechanically stable (i.e., no movement of the mounting due to thermal contraction of the stack, duct, etc.) and a clean stack condition has been determined by a steady zero opacity condition, perform the zero alignment. This alignment is performed by balancing the continuous monitor system response so that any simulated zero check coincides with an actual zero check performed across the monitor pathlength of the clean stack.

8.2.1.3 Span. Span the continuous monitoring system at the opacity specified in subparts and offset the zero setting at least 10 percent of span so that negative drift can be quantified.

8.2.2. Final Alignments. After the preliminary alignments have been completed and the affected facility has been started up and reaches normal operating temperature, recheck the optical alignment in accordance with 8.2.1.1 of this specification. If the alignment has shifted, realign the optics, record any detectable shift in the opacity measured by the system that can be attributed to the optical realignment, and notify the Administrator. This condition may not be objectionable if the affected facility operates within a fairly constant and adequately narrow range of operating temperatures that does not produce significant shifts in optical alignment during normal operation of the facility. Under circumstances where the facility operations produce fluctuations in the effluent gas temperature that result in significant misalignments, the Administrator may require improved mounting structures or another location for installation of the transmissometer.

8.2.3 Conditioning Period. After completing the post-startup alignments, operate the system for an initial 168-hour conditioning period in a normal operational manner.

8.2.4 Operational Test Period. After completing the conditioning period, operate the system for an additional 168-hour period retaining the zero offset. The system shall monitor the source effluent at all times except when being zeroed or calibrated. At 24-hour intervals the zero and span shall be checked according to the manufacturer's instructions. Minimum procedures used shall provide a system check of the analyzer internal mirrors and all electronic circuitry including the lamp and photodetector assembly and shall include a procedure for producing a simulated zero opacity condition and a simulated upscale (span) opacity condition as viewed by the receiver. The manufacturer's written instructions may be used providing that they equal or exceed these minimum procedures. Zero and span the transmissometer, clean all optical surfaces exposed to the effluent, realign optics, and make any necessary adjustments to the calibration of the system daily. These zero and calibration adjustments and optical realignments are allowed only at 24-hour intervals or at such shorter intervals as the manufacturer's written instructions specify. Automatic corrections made by the measurement system without operator intervention are allowable at any time. The magnitude of any zero or span drift adjustments shall be recorded. During this 168-hour operational test period, record the following at 24-hour intervals: (a) The zero reading and span readings after the system is calibrated (these readings should be set at the same value at the beginning of each 24-hour period); (b) the zero reading after each 24 hours of operation, but before cleaning and adjustment; and (c) the span reading after cleaning and zero adjustment, but before span adjustment. (See Figure 1–3.)

9. Calculation, Data Analysis, and Reporting.

9.1 Procedure for Determination of Mean Values and Confidence Intervals.

9.1.1 The mean value of the data set is calculated according to equation 1–1.

$$\bar{x} = \frac{1}{n} \sum_{i=1}^{n} x_i \qquad \text{Equation 1-1}$$

where x_i = absolute value of the individual measurements,

Σ = sum of the individual values.

$\bar{x}$ = mean value, and

n = number of data points.

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9.1.2 The 95 percent confidence interval (two-sided) is calculated according to equation 1-2:

$$C.I._{95}=\frac{t_{.975}}{n\sqrt{n-1}}\sqrt{n(\sum x_i^2)-(\sum x_i)^2}$$

Equation 1-2

where

$\sum x_i$ = sum of all data points,

$t_{.975}=t_1-\alpha/2$, and

$C.I._{95}$ = 95 percent confidence interval estimate of the average mean value.

Values for $t_{.975}$

n	$t_{.975}$	n	$t_{.975}$
2	12.706	10	2.262
3	4.303	11	2.228
4	3.182	12	2.201
5	2.776	13	2.179
6	2.571	14	2.160
7	2.447	15	2.145
8	2.365	16	2.131
9	2.306		

The values in this table are already corrected for n-1 degrees of freedom. Use n equal to the number of samples as data points.

9.2 Data Analysis and Reporting.

9.2.1 Spectral Response. Combine the spectral data obtained in accordance with paragraph 6.3.1 to develop the effective spectral response curve of the transmissometer. Report the wavelength at which the peak response occurs, the wavelength at which the mean response occurs, and the maximum response at any wavelength below 400 nm and above 700 nm expressed as a percentage of the peak response as required under paragraph 6.2.

9.2.2 Angle of View. Using the data obtained in accordance with paragraph 6.3.2, calculate the response of the receiver as a function of viewing angle in the horizontal and vertical directions (26 centimeters of arc with a radius of 3 meters equal 5 degrees). Report relative angle of view curves as required under paragraph 6.2.

9.2.3 Angle of Projection. Using the data obtained in accordance with paragraph 6.3.3, calculate the response of the photoelectric detector as a function of projection angle in the horizontal and vertical directions. Report relative angle of projection curves as required under paragraph 6.2.

9.2.4 Calibration Error. Using the data from paragraph 8.1 (Figure 1-1), subtract the known filter opacity value from the value shown by the measurement system for each of the 15 readings. Calculate the mean and 95 percent confidence interval of the five different values at each test filter value according to equations 1-1 and 1-2. Report the sum of the absolute mean difference and the 95 percent confidence interval for each of the three test filters.

9.2.5 Zero Drift. Using the zero opacity values measured every 24 hours during the field test (paragraph 8.2), calculate the differences between the zero point after cleaning, aligning, and adjustment, and the zero value 24 hours later just prior to cleaning, aligning, and adjustment. Calculate the mean value of these points and the confidence interval using equations 1-1 and 1-2. Report the sum of the absolute mean value and the 95 percent confidence interval.

9.2.6 Calibration Drift. Using the span value measured every 24 hours during the field test, calculate the differences between the span value after cleaning, aligning, and adjustment of zero and span, and the span value 24 hours later just after cleaning, aligning, and adjustment of zero and before adjustment of span. Calculate the mean value of these points and the confidence interval using equations 1-1 and 1-2. Report the sum of the absolute mean value and the confidence interval.

9.2.7 Response Time. Using the data from paragraph 8.1, calculate the time interval from filter insertion to 95 percent of the final stable value for all upscale and downscale traverses. Report the mean of the 10 upscale and downscale test times.

9.2.8 Operational Test Period. During the 168-hour operational test period, the continuous monitoring system shall not require any corrective maintenance, repair, replacement, or adjustment other than that clearly specified as required in the manufacturer's operation and maintenance manuals as routine and expected during a one-week period. If the continuous monitoring system is operated within the specified performance parameters and does not require corrective maintenance, repair, replacement, or adjustment other than as specified above during the 168-hour test period, the operational test period shall have been successfully concluded. Failure of the continuous monitoring system to meet these requirements shall call for a repetition of the 168-hour test period. Portions of the tests which were satisfactorily completed need not be repeated. Failure to meet any performance specification(s) shall call for a repetition of the one-week operational test period and that specific portion of the tests required by paragraph 8 related to demonstrating compliance with the failed specification. All maintenance and adjustments required shall be recorded. Output readings shall be recorded before and after all adjustments.

10. References.

10.1 "Experimental Statistics," Department of Commerce, National Bureau of Standards Handbook 91, 1963, pp. 3-31, paragraphs 3-3.1.4.

10.2 "Performance Specifications for Stationary-Source Monitoring Systems for Gases and Visible Emissions," Environmental Protection Agency, Research Triangle Park, N.C., EPA-650/2-74-013, January 1974.

Calibrated Neutral Density Filter Data
(See paragraph 8.1.1)

Low
Range ____% opacity
Span Value _____% opacity

Mid
Range ___% opacity

High
Range ___% opacity

Date of Test ________________ Location of Test ________________

Calibrated Filter[1]	Analyzer Reading % Opacity	Differences[2] % Opacity
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		

	Low	Mid	High
Mean difference	____	____	____
Confidence interval	____	____	____
Calibration error = Mean Difference[3] + C.I.	____	____	____

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[1] Low, mid or high range

[2] Calibration filter opacity - analyzer reading

[3] Absolute value

Figure 1-1. Calibration Error Test

Date of Test__________ Location of Test __________

Span Filter__________% Opacity

Analyzer Span Setting__________% Opacity

Upscale 1 __________ seconds
2 __________ seconds
3 __________ seconds
4 __________ seconds
5 __________ seconds

Downscale 1 __________ seconds
2 __________ seconds
3 __________ seconds
4 __________ seconds
5 __________ seconds
Average response __________ seconds

Figure 1-2. Response Time Test

Zero Setting __________ (See paragraph 8.2.1) Date of Test __________

Span Setting __________

Date and Time	Zero Reading (Before cleaning and adjustment)	Zero Drift (ΔZero)	Span Reading (After cleaning and zero adjustment but before span adjustment)	Calibration Drift (ΔSpan)

Zero Drift = Mean Zero Drift* __________ + CI (Zero) __________ = __________.

Calibration Drift = Mean Span Drift* __________ + CI (Span) __________ = __________.

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*Absolute value

Figure 1-3. Zero and Calibration Drift Test

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PERFORMANCE SPECIFICATION 2—PERFORMANCE SPECIFICATIONS AND SPECIFICATION TEST PROCEDURES FOR MONITORS OF SO_2 AND NO_x FROM STATIONARY SOURCES

1. Principle and Applicability.

1.1 Principle. The concentration of sulfur dioxide or oxides of nitrogen pollutants in stack emissions is measured by a continuously operating emission measurement system. Concurrent with operation of the continuous monitoring system, the pollutant concentrations are also measured with reference methods (Appendix A). An average of the continuous monitoring system data is computed for each reference method testing period and compared to determine the relative accuracy of the continuous monitoring system. Other tests of the continuous monitoring system are also performed to determine calibration error, drift, and response characteristics of the system.

1.2 Applicability. This performance specification is applicable to evaluation of continuous monitoring systems for measurement of nitrogen oxides or sulfur dioxide pollutants. These specifications contain test procedures, installation requirements, and data computation procedures for evaluating the acceptability of the continuous monitoring systems.

2. Apparatus.

2.1 Calibration Gas Mixtures. Mixtures of known concentrations of pollutant gas in a diluent gas shall be prepared. The pollutant gas shall be sulfur dioxide or the appropriate oxide(s) of nitrogen specified by paragraph 6 and within subparts. For sulfur dioxide gas mixtures, the diluent gas may be air or nitrogen. For nitric oxide (NO) gas mixtures, the diluent gas shall be oxygen-free (<10 ppm) nitrogen, and for nitrogen dioxide (NO_2) gas mixtures the diluent gas shall be air. Concentrations of approximately 50 percent and 90 percent of span are required. The 90 percent gas mixture is used to set and to check the span and is referred to as the span gas.

2.2 Zero Gas. A gas certified by the manufacturer to contain less than 1 ppm of the pollutant gas or ambient air may be used.

2.3 Equipment for measurement of the pollutant gas concentration using the reference method specified in the applicable standard.

2.4 Data Recorder. Analog chart recorder or other suitable device with input voltage range compatible with analyzer system output. The resolution of the recorder's data output shall be sufficient to allow completion of the test procedures within this specification.

2.5 Continuous monitoring system for SO_2 or NO_x pollutants as applicable.

3. Definitions.

3.1 Continuous Monitoring System. The total equipment required for the determination of a pollutant gas concentration in a source effluent. Continuous monitoring systems consist of major subsystems as follows:

3.1.1 Sampling Interface. That portion of an extractive continuous monitoring system that performs one or more of the following operations: Acquisition, transportation, and conditioning of a sample of the source effluent or that portion of an in-situ continuous monitoring system that protects the analyzer from the effluent.

3.1.2 Analyzer. That portion of the continuous monitoring system which senses the pollutant gas and generates a signal output that is a function of the pollutant concentration.

3.1.3 Data Recorder. That portion of the continuous monitoring system that provides a permanent record of the output signal in terms of concentration units.

3.2 Span. The value of pollutant concentration at which the continuous monitoring system is set to produce the maximum data display output. The span shall be set at the concentration specified in each applicable subpart.

3.3 Accuracy (Relative). The degree of correctness with which the continuous monitoring system yields the value of gas concentration of a sample relative to the value given by a defined reference method. This accuracy is expressed in terms of error, which is the difference between the paired concentration measurements expressed as a percentage of the mean reference value.

3.4 Calibration Error. The difference between the pollutant concentration indicated by the continuous monitoring system and the known concentration of the test gas mixture.

3.5 Zero Drift. The change in the continuous monitoring system output over a stated period of time of normal continuous operation when the pollutant concentration at the time for the measurements is zero.

3.6 Calibration Drift. The change in the continuous monitoring system output over a stated time period of normal continuous operations when the pollutant concentration at the time of the measurements is the same known upscale value.

3.7 Response Time. The time interval from a step change in pollutant concentration at the input to the continuous monitoring system to the time at which 95 percent of the corresponding final value is reached as displayed on the continuous monitoring system data recorder.

3.8 Operational Period. A minimum period of time over which a measurement system is expected to operate within certain performance specifications without unscheduled maintenance, repair, or adjustment.

3.9 Stratification. A condition identified by a difference in excess of 10 percent between the average concentration in the duct or stack and the concentration at any point more than 1.0 meter from the duct or stack wall.

4. Installation Specifications. Pollutant continuous monitoring systems (SO_2 and NO_x) shall be installed at a sampling location where measurements can be made which are directly representative (4.1), or which can be corrected so as to be representative (4.2) of the total emissions from the affected

facility. Conformance with this requirement shall be accomplished as follows:

4.1 Effluent gases may be assumed to be nonstratified if a sampling location eight or more stack diameters (equivalent diameters) downstream of any air in-leakage is selected. This assumption and data correction procedures under paragraph 4.2.1 may not be applied to sampling locations upstream of an air preheater in a steam generating facility under Subpart D of this part. For sampling locations where effluent gases are either demonstrated (4.3) or may be assumed to be nonstratified (eight diameters), a point (extractive systems) or path (in-situ systems) of average concentration may be monitored.

4.2 For sampling locations where effluent gases cannot be assumed to be nonstratified (less than eight diameters) or have been shown under paragraph 4.3 to be stratified, results obtained must be consistently representative (e.g. a point of average concentration may shift with load changes) or the data generated by sampling at a point (extractive systems) or across a path (in-situ systems) must be corrected (4.2.1 and 4.2.2) so as to be representative of the total emissions from the affected facility. Conformance with this requirement may be accomplished in either of the following ways:

4.2.1 Installation of a diluent continuous monitoring system (O_2 or CO_2 as applicable) in accordance with the procedures under paragraph 4.2 of Performance Specification 3 of this appendix. If the pollutant and diluent monitoring systems are not of the same type (both extractive or both in-situ), the extractive system must use a multipoint probe.

4.2.2 Installation of extractive pollutant monitoring systems using multipoint sampling probes or in-situ pollutant monitoring systems that sample or view emissions which are consistently representative of the total emissions for the entire cross section. The Administrator may require data to be submitted to demonstrate that the emissions sampled or viewed are consistently representative for several typical facility process operating conditions.

4.3 The owner or operator may perform a traverse to characterize any stratification of effluent gases that might exist in a stack or duct. If no stratification is present, sampling procedures under paragraph 4.1 may be applied even though the eight diameter criteria is not met.

4.4 When single point sampling probes for extractive systems are installed within the stack or duct under paragraphs 4.1 and 4.2.1, the sample may not be extracted at any point less than 1.0 meter from the stack or duct wall. Multipoint sampling probes installed under paragraph 4.2.2 may be located at any points necessary to obtain consistently representative samples.

5. Continuous Monitoring System Performance Specifications.

The continuous monitoring system shall meet the performance specifications in Table 2-1 to be considered acceptable under this method.

TABLE 2-1.—*Performance specifications*

Parameter	*Specification*
1. Accuracy [1]	≤20 pct of the mean value of the reference method test data.
2. Calibration error [1]	≤ 5 pct of each (50 pct, 90 pct) calibration gas mixture value.
3. Zero drift (2 h) [1]	2 pct of span
4. Zero drift (24 h) [1]	Do.
5. Calibration drift (2 h) [1]	Do.
6. Calibration drift (24 h) [1]	2.5 pct. of span
7. Response time	15 min maximum.
8. Operational period	168 h minimum.

[1] Expressed as sum of absolute mean value plus 95 pct confidence interval of a series of tests.

6. Performance Specification Test Procedures. The following test procedures shall be used to determine conformance with the requirements of paragraph 5. For NO_x analyzers that oxidize nitric oxide (NO) to nitrogen dioxide (NO_2), the response time test under paragraph 6.3 of this method shall be performed using nitric oxide (NO) span gas. Other tests for NO_x continuous monitoring systems under paragraphs 6.1 and 6.2 and all tests for sulfur dioxide systems shall be performed using the pollutant span gas specified by each subpart.

6.1 Calibration Error Test Procedure. Set up and calibrate the complete continuous monitoring system according to the manufacturer's written instructions. This may be accomplished either in the laboratory or in the field.

6.1.1 Calibration Gas Analyses. Triplicate analyses of the gas mixtures shall be performed within two weeks prior to use using Reference Methods 6 for SO_2 and 7 for NO_x. Analyze each calibration gas mixture (50%, 90%) and record the results on the example sheet shown in Figure 2-1. Each sample test result must be within 20 percent of the averaged result or the tests shall be repeated. This step may be omitted for non-extractive monitors where dynamic calibration gas mixtures are not used (6.1.2).

6.1.2 Calibration Error Test Procedure. Make a total of 15 nonconsecutive measurements by alternately using zero gas and each calibration gas mixture concentration (e.g., 0%, 50%, 0%, 90%, 50%, 90%, 50%, 0%, etc.). For nonextractive continuous monitoring systems, this test procedure may be performed by using two or more calibration gas cells whose concentrations are certified by the manufacturer to be functionally equivalent to these gas concentrations. Convert the continuous monitoring system output readings to ppm and record the results on the example sheet shown in Figure 2-2.

6.2 Field Test, for Accuracy (Relative), Zero Drift, and Calibration Drift. Install and operate the continuous monitoring system in accordance with the manufacturer's written instructions and drawings as follows:

6.2.1 Conditioning Period. Offset the zero setting at least 10 percent of the span so that negative zero drift can be quantified. Operate the system for an initial 168-hour conditioning period in normal operating manner.

6.2.2 Operational Test Period. Operate the continuous monitoring system for an additional 168-hour period retaining the zero offset. The system shall monitor the source effluent at all times except when being zeroed, calibrated, or backpurged.

6.2.2.1 Field Test for Accuracy (Relative). For continuous monitoring systems employing extractive sampling, the probe tip for the continuous monitoring system and the probe tip for the Reference Method sampling train should be placed at adjacent locations in the duct. For NO_x continuous monitoring systems, make 27 NO_x concentration measurements, divided into nine sets, using the applicable reference method. No more than one set of tests, consisting of three individual measurements, shall be performed in any one hour. All individual measurements of each set shall be performed concurrently, or within a three-minute interval and the results averaged. For SO_2 continuous monitoring systems, make nine SO_2 concentration measurements using the applicable reference method. No more than one measurement shall be performed in any one hour. Record the reference method test data and the continuous monitoring system concentrations on the example data sheet shown in Figure 2-3.

6.2.2.2 Field Test for Zero Drift and Calibration Drift. For extractive systems, determine the values given by zero and span gas pollutant concentrations at two-hour intervals until 15 sets of data are obtained. For nonextractive measurement systems, the zero value may be determined by mechanically producing a zero condition that provides a system check of the analyzer internal mirrors and all electronic circuitry including the radiation source and detector assembly or by inserting three or more calibration gas cells and computing the zero point from the upscale measurements. If this latter technique is used, a graph(s) must be retained by the owner or operator for each measurement system that shows the relationship between the upscale measurements and the zero point. The span of the system shall be checked by using a calibration gas cell certified by the manufacturer to be functionally equivalent to 50 percent of span concentration. Record the zero and span measurements (or the computed zero drift) on the example data sheet shown in Figure 2-4. The two-hour periods over which measurements are conducted need not be consecutive but may not overlap. All measurements required under this paragraph may be conducted concurrent with tests under paragraph 6.2.2.1.

6.2.2.3 Adjustments. Zero and calibration corrections and adjustments are allowed only at 24-hour intervals or at such shorter intervals as the manufacturer's written instructions specify. Automatic corrections made by the measurement system without operator intervention or initiation are allowable at any time. During the entire 168-hour operational test period, record on the example sheet shown in Figure 2-5 the values given by zero and span gas pollutant concentrations before and after adjustment at 24-hour intervals.

6.3 Field Test for Response Time.

6.3.1 Scope of Test. Use the entire continuous monitoring system as installed, including sample transport lines if used. Flow rates, line diameters, pumping rates, pressures (do not allow the pressurized calibration gas to change the normal operating pressure in the sample line), etc., shall be at the nominal values for normal operation as specified in the manufacturer's written instructions. If the analyzer is used to sample more than one pollutant source (stack), repeat this test for each sampling point.

6.3.2 Response Time Test Procedure. Introduce zero gas into the continuous monitoring system sampling interface or as close to the sampling interface as possible. When the system output reading has stabilized, switch quickly to a known concentration of pollutant gas. Record the time from concentration switching to 95 percent of final stable response. For non-extractive monitors, the highest available calibration gas concentration shall be switched into and out of the sample path and response times recorded. Perform this test sequence three (3) times. Record the results of each test on the example sheet shown in Figure 2-6.

7. Calculations, Data Analysis and Reporting.

7.1 Procedure for determination of mean values and confidence intervals.

7.1.1 The mean value of a data set is calculated according to equation 2-1.

$$\bar{x}=\frac{1}{n}\sum_{i=1}^{n}x_i \qquad \text{Equation 2-1}$$

where:

x_i = absolute value of the measurements,
Σ = sum of the individual values,
$\bar{x}$ = mean value, and
n = number of data points.

7.1.2 The 95 percent confidence interval (two-sided) is calculated according to equation 2-2:

$$C.I._{95}=\frac{t_{.975}}{n\sqrt{n-1}}\sqrt{n(\sum x_i^2)-(\sum x_i)^2} \qquad \text{Equation 2-2}$$

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where:

$\sum x_i$ = sum of all data points,

$t_{.975} = t_1 - \alpha/2$, and

$C.I._{95}$ = 95 percent confidence interval estimate of the average mean value.

Values for $t_{.975}$

n	$t_{.975}$
2	12.706
3	4.303
4	3.182
5	2.776
6	2.571
7	2.447
8	2.365
9	2.306
10	2.262
11	2.228
12	2.201
13	2.179
14	2.160
15	2.145
16	2.131

The values in this table are already corrected for n-1 degrees of freedom. Use n equal to the number of samples as data points.

7.2 Data Analysis and Reporting.

7.2.1 Accuracy (Relative). For each of the nine reference method test points, determine the average pollutant concentration reported by the continuous monitoring system. These average concentrations shall be determined from the continuous monitoring system data recorded under 7.2.2 by integrating or averaging the pollutant concentrations over each of the time intervals concurrent with each reference method testing period. Before proceeding to the next step, determine the basis (wet or dry) of the continuous monitoring system data and reference method test data concentrations. If the bases are not consistent, apply a moisture correction to either reference method concentrations or the continuous monitoring system concentrations as appropriate. Determine the correction factor by moisture tests concurrent with the reference method testing periods. Report the moisture test method and the correction procedure employed. For each of the nine test runs determine the difference for each test run by subtracting the respective reference method test concentrations (use average of each set of three measurements for NO_x) from the continuous monitoring system integrated or averaged concentrations. Using these data, compute the mean difference and the 95 percent confidence interval of the differences (equations 2-1 and 2-2). Accuracy is reported as the sum of the absolute value of the mean difference and the 95 percent confidence interval of the differences expressed as a percentage of the mean reference method value. Use the example sheet shown in Figure 2-3.

7.2.2 Calibration Error. Using the data from paragraph 6.1, subtract the measured pollutant concentration determined under paragraph 6.1.1 (Figure 2-1) from the value shown by the continuous monitoring system for each of the five readings at each concentration measured under 6.1.2 (Figure 2-2). Calculate the mean of these difference values and the 95 percent confidence intervals according to equations 2-1 and 2-2. Report the calibration error (the sum of the absolute value of the mean difference and the 95 percent confidence interval) as a percentage of each respective calibration gas concentration. Use example sheet shown in Figure 2-2.

7.2.3 Zero Drift (2-hour). Using the zero concentration values measured each two hours during the field test, calculate the differences between consecutive two-hour readings expressed in ppm. Calculate the mean difference and the confidence interval using equations 2-1 and 2-2. Report the zero drift as the sum of the absolute mean value and the confidence interval as a percentage of span. Use example sheet shown in Figure 2-4.

7.2.4 Zero Drift (24-hour). Using the zero concentration values measured every 24 hours during the field test, calculate the differences between the zero point after zero adjustment and the zero value 24 hours later just prior to zero adjustment. Calculate the mean value of these points and the confidence interval using equations 2-1 and 2-2. Report the zero drift (the sum of the absolute mean and confidence interval) as a percentage of span. Use example sheet shown in Figure 2-5.

7.2.5 Calibration Drift (2-hour). Using the calibration values obtained at two-hour intervals during the field test, calculate the differences between consecutive two-hour readings expressed as ppm. These values should be corrected for the corresponding zero drift during that two-hour period. Calculate the mean and confidence interval of these corrected difference values using equations 2-1 and 2-2. Do not use the differences between non-consecutive readings. Report the calibration drift as the sum of the absolute mean and confidence interval as a percentage of span. Use example sheet shown in Figure 2-4.

7.2.6 Calibration Drift (24-hour). Using the calibration values measured every 24 hours during the field test, calculate the differences between the calibration concentration reading after zero and calibration adjustment, and the calibration concentration reading 24 hours later after zero adjustment but before calibration adjustment. Calculate the mean value of these differences and the confidence interval using equations 2-1 and 2-2. Report the calibration drift (the sum of the absolute mean and confidence interval) as a percentage of span. Use the example sheet shown in Figure 2-5.

7.2.7 Response Time. Using the charts from paragraph 6.3, calculate the time interval from concentration switching to 95 percent to the final stable value for all upscale and downscale tests. Report the mean of the three upscale test times and the mean of the three downscale test times. The two average times should not differ by more than 15 percent of the slower time. Report the slower time as the system response time. Use the example sheet shown in Figure 2-6.

7.2.8 Operational Test Period. During the 168-hour performance and operational test period, the continuous monitoring system shall not require any corrective maintenance, repair, replacement, or adjustment other than that clearly specified as required in the operation and maintenance manuals as routine and expected during a one-week period. If the continuous monitoring system operates within the specified performance parameters and does not require corrective maintenance, repair, replacement or adjustment other than as specified above during the 168-hour test period, the operational period will be successfully concluded. Failure of the continuous monitoring system to meet this requirement shall call for a repetition of the 168-hour test period. Portions of the test which were satisfactorily completed need not be repeated. Failure to meet any performance specifications shall call for a repetition of the one-week performance test period and that portion of the testing which is related to the failed specification. All maintenance and adjustments required shall be recorded. Output readings shall be recorded before and after all adjustments.

8. References.

8.1 "Monitoring Instrumentation for the Measurement of Sulfur Dioxide in Stationary Source Emissions," Environmental Protection Agency, Research Triangle Park, N.C., February 1973.

8.2 "Instrumentation for the Determination of Nitrogen Oxides Content of Stationary Source Emissions," Environmental Protection Agency, Research Triangle Park, N.C., Volume 1, APTD-0847, October 1971; Volume 2, APTD-0942, January 1972.

8.3 "Experimental Statistics," Department of Commerce, Handbook 91, 1963, pp. 3-31, paragraphs 3-3.1.4.

8.4 "Performance Specifications for Stationary-Source Monitoring Systems for Gases and Visible Emissions," Environmental Protection Agency, Research Triangle Park, N.C., EPA-650/2-74-013, January 1974.

Date ____________ Reference Method Used ____

Mid-Range Calibration Gas Mixture

Sample 1 ________ppm
Sample 2 ________ppm
Sample 3 ________ppm
Average ________ppm

High-Range (span) Calibration Gas Mixture

Sample 1 ________ppm
Sample 2 ________ppm
Sample 3 ________ppm
Average ________ppm

Figure 2-1. Analysis of Calibration Gas Mixtures

Calibration Gas Mixture Data (From Figure 2-1)

Mid (50%) _____ppm High (90%) _____ppm

Run #	Calibration Gas Concentration, ppm	Measurement System Reading, ppm	Differences,[1] ppm
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			

	Mid	High
Mean difference	_____	_____
Confidence interval	± _____	± _____

$$\text{Calibration error} = \frac{\text{Mean Difference}^2 + \text{C.I.}}{\text{Average Calibration Gas Concentration}} \times 100 \quad \_\_\_\_\% \quad \_\_\_\_$$

---

[1] Calibration gas concentration - measurement system reading

[2] Absolute value

Figure 2-2. Calibration Error Determination

Test No.	Date and Time	Reference Method Samples					Analyzer 1-Hour Average (ppm)*		Difference (ppm)	
		SO_2 Sample 1 (ppm)	NO_x Sample 1 (ppm)	NO_x Sample 2 (ppm)	NO_x Sample 3 (ppm)	NO_x Sample Average (ppm)	SO_2	NO_x	SO_2	NO_x
1										
2										
3										
4										
5										
6										
7										
8										
9										

Mean reference method test value (SO_2) ______

Mean reference method test value (NO_x) ______

Mean of the differences ______

95% Confidence intervals = ± ______ ppm (SO_2) = ± ______ ppm (NO_x)

$$\text{Accuracies} = \frac{\text{Mean of the differences} + \text{95\% confidence interval}}{\text{Mean reference method value}} \times 100 = \_\_\_\%\ (SO_2) = \_\_\_\%\ (NO_x)$$

* Explain and report method used to determine integrated averages

Figure 2-3. Accuracy Determination (SO_2 and NO_x)

Data Set No.	Time Begin	End	Date	Zero Reading	Zero Drift (ΔZero)	Span Reading	Span Drift (ΔSpan)	Calibration Drift (Span- Zero)
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								

Zero Drift = [Mean Zero Drift* ______ + CI (Zero) ______] ÷ [Span] x 100 = ______.

Calibration Drift = [Mean Span Drift* ______ + CI (Span) ______] ÷ [Span] x 100 = ______.

*Absolute Value.

Figure 2-4. Zero and Calibration Drift (2 Hour)

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Date and Time	Zero Reading	Zero Drift (ΔZero)	Span Reading (After zero adjustment)	Calibration Drift (ΔSpan)

Zero Drift = [Mean Zero Drift* _______ + C.I. (Zero) _______]

÷ [Instrument Span] x 100 = _________.

Calibration Drift = [Mean Span Drift* _________ + C.I. (Span) _________]

÷ [Instrument Span] x 100 = _________.

* Absolute value

Figure 2-5. Zero and Calibration Drift (24-hour)

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Date of Test ______________

Span Gas Concentration __________ppm

Analyzer Span Setting __________ppm

Upscale
1 ________seconds
2 ________seconds
3 ________seconds

Average upscale response ________seconds

Downscale
1 ________seconds
2 ________seconds
3 ________seconds

Average downscale response ______seconds

System average response time (slower time) = _______seconds.

$$\%\text{deviation from slower system average response} = \left[\frac{\text{average upscale minus average downscale}}{\text{slower time}}\right] \times 100\% = \_\_\_\_.$$

Figure 2-6. Response Time

Performance Specification 3—Performance specifications and specification test procedures for monitors of CO_2 and O_2 from stationary sources.

1. Principle and Applicability.

1.1 Principle. Effluent gases are continuously sampled and are analyzed for carbon dioxide or oxygen by a continuous monitoring system. Tests of the system are performed during a minimum operating period to determine zero drift, calibration drift, and response time characteristics.

1.2 Applicability. This performance specification is applicable to evaluation of continuous monitoring systems for measurement of carbon dioxide or oxygen. These specifications contain test procedures, installation requirements, and data computation procedures for evaluating the acceptability of the continuous monitoring systems subject to approval by the Administrator. Sampling may include either extractive or non-extractive (in-situ) procedures.

2. Apparatus.

2.1 Continuous Monitoring System for Carbon Dioxide or Oxygen.

2.2 Calibration Gas Mixtures. Mixture of known concentrations of carbon dioxide or oxygen in nitrogen or air. Midrange and 90 percent of span carbon dioxide or oxygen concentrations are required. The 90 percent of span gas mixture is to be used to set and check the analyzer span and is referred to as span gas. For oxygen analyzers, if the span is higher than 21 percent O_2, ambient air may be used in place of the 90 percent of span calibration gas mixture. Triplicate analyses of the gas mixture (except ambient air) shall be performed within two weeks prior to use using Reference Method 3 of this part.

2.3 Zero Gas. A gas containing less than 100 ppm of carbon dioxide or oxygen.

2.4 Data Recorder. Analog chart recorder or other suitable device with input voltage range compatible with analyzer system output. The resolution of the recorder's data output shall be sufficient to allow completion of the test procedures within this specification.

3. Definitions.

3.1 Continuous Monitoring System. The total equipment required for the determination of carbon dioxide or oxygen in a given source effluent. The system consists of three major subsystems:

3.1.1 Sampling Interface. That portion of the continuous monitoring system that performs one or more of the following operations: Delineation, acquisition, transportation, and conditioning of a sample of the source effluent or protection of the analyzer from the hostile aspects of the sample or source environment.

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3.1.2 Analyzer. That portion of the continuous monitoring system which senses the pollutant gas and generates a signal output that is a function of the pollutant concentration.

3.1.3 Data Recorder. That portion of the continuous monitoring system that provides a permanent record of the output signal in terms of concentration units.

3.2 Span. The value of oxygen or carbon dioxide concentration at which the continuous monitoring system is set that produces the maximum data display output. For the purposes of this method, the span shall be set no less than 1.5 to 2.5 times the normal carbon dioxide or normal oxygen concentration in the stack gas of the affected facility.

3.3 Midrange. The value of oxygen or carbon dioxide concentration that is representative of the normal conditions in the stack gas of the affected facility at typical operating rates.

3.4 Zero Drift. The change in the continuous monitoring system output over a stated period of time of normal continuous operation when the carbon dioxide or oxygen concentration at the time for the measurements is zero.

3.5 Calibration Drift. The change in the continuous monitoring system output over a stated time period of normal continuous operation when the carbon dioxide or oxygen continuous monitoring system is measuring the concentration of span gas.

3.6 Operational Test Period. A minimum period of time over which the continuous monitoring system is expected to operate within certain performance specifications without unscheduled maintenance, repair, or adjustment.

3.7 Response time. The time interval from a step change in concentration at the input to the continuous monitoring system to the time at which 95 percent of the corresponding final value is displayed on the continuous monitoring system data recorder.

4. Installation Specification.

Oxygen or carbon dioxide continuous monitoring systems shall be installed at a location where measurements are directly representative of the total effluent from the affected facility or representative of the same effluent sampled by a SO_2 or NO_x continuous monitoring system. This requirement shall be complied with by use of applicable requirements in Performance Specification 2 of this appendix as follows:

4.1 Installation of Oxygen or Carbon Dioxide Continuous Monitoring Systems Not Used to Convert Pollutant Data. A sampling location shall be selected in accordance with the procedures under paragraphs 4.2.1 or 4.2.2, or Performance Specification 2 of this appendix.

4.2 Installation of Oxygen or Carbon Dioxide Continuous Monitoring Systems Used to Convert Pollutant Continuous Monitoring System Data to Units of Applicable Standards. The diluent continuous monitoring system (oxygen or carbon dioxide) shall be installed at a sampling location where measurements that can be made are representative of the effluent gases sampled by the pollutant continuous monitoring system(s). Conformance with this requirement may be accomplished in any of the following ways:

4.2.1 The sampling location for the diluent system shall be near the sampling location for the pollutant continuous monitoring system such that the same approximate point(s) (extractive systems) or path (in-situ systems) in the cross section is sampled or viewed.

4.2.2 The diluent and pollutant continuous monitoring systems may be installed at different locations if the effluent gases at both sampling locations are nonstratified as determined under paragraphs 4.1 or 4.3, Performance Specification 2 of this appendix and there is no in-leakage occurring between the two sampling locations. If the effluent gases are stratified at either location, the procedures under paragraph 4.2.2, Performance Specification 2 of this appendix shall be used for installing continuous monitoring systems at that location.

5. Continuous Monitoring System Performance Specifications.

The continuous monitoring system shall meet the performance specifications in Table 3–1 to be considered acceptable under this method.

6. Performance Specification Test Procedures.

The following test procedures shall be used to determine conformance with the requirements of paragraph 4. Due to the wide variation existing in analyzer designs and principles of operation, these procedures are not applicable to all analyzers. Where this occurs, alternative procedures, subject to the approval of the Administrator, may be employed. Any such alternative procedures must fulfill the same purposes (verify response, drift, and accuracy) as the following procedures, and must clearly demonstrate conformance with specifications in Table 3–1.

6.1 Calibration Check. Establish a calibration curve for the continuous monitoring system using zero, midrange, and span concentration gas mixtures. Verify that the resultant curve of analyzer reading compared with the calibration gas value is consistent with the expected response curve as described by the analyzer manufacturer. If the expected response curve is not produced, additional calibration gas measurements shall be made, or additional steps undertaken to verify the accuracy of the response curve of the analyzer.

6.2 Field Test for Zero Drift and Calibration Drift. Install and operate the continuous monitoring system in accordance

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with the manufacturer's written instructions and drawings as follows:

TABLE 3-1.—*Performance specifications*

Parameter	*Specification*
1. Zero drift (2 h) [1]	≤0.4 pct O_2 or CO_2.
2. Zero drift (24 h) [1]	≤0.5 pct O_2 or CO_2.
3. Calibration drift (2 h) [1]	≤0.4 pct O_2 or CO_2.
4. Calibration drift (24 h) [1]	≤0.5 pct O_2 or CO_2.
5. Operational period	168 h minimum.
6. Response time	10 min.

[1] Expressed as sum of absolute mean value plus 95 pct confidence interval of a series of tests.

6.2.1 Conditioning Period. Offset the zero setting at least 10 percent of span so that negative zero drift may be quantified. Operate the continuous monitoring system for an initial 168-hour conditioning period in a normal operational manner.

6.2.2. Operational Test Period. Operate the continuous monitoring system for an additional 168-hour period maintaining the zero offset. The system shall monitor the source effluent at all times except when being zeroed, calibrated, or backpurged.

6.2.3 Field Test for Zero Drift and Calibration Drift. Determine the values given by zero and midrange gas concentrations at two-hour intervals until 15 sets of data are obtained. For non-extractive continuous monitoring systems, determine the zero value given by a mechanically produced zero condition or by computing the zero value from upscale measurements using calibrated gas cells certified by the manufacturer. The midrange checks shall be performed by using certified calibration gas cells functionally equivalent to less than 50 percent of span. Record these readings on the example sheet shown in Figure 3-1. These two-hour periods need not be consecutive but may not overlap. In-situ CO_2 or O_2 analyzers which cannot be fitted with a calibration gas cell may be calibrated by alternative procedures acceptable to the Administrator. Zero and calibration corrections and adjustments are allowed only at 24-hour intervals or at such shorter intervals as the manufacturer's written instructions specify. Automatic corrections made by the continuous monitoring system without operator intervention or initiation are allowable at any time. During the entire 168-hour test period, record the values given by zero and span gas concentrations before and after adjustment at 24-hour intervals in the example sheet shown in Figure 3-2.

6.3 Field Test for Response Time.

6.3.1 Scope of Test.

This test shall be accomplished using the continuous monitoring system as installed, including sample transport lines if used. Flow rates, line diameters, pumping rates, pressures (do not allow the pressurized calibration gas to change the normal operating pressure in the sample line), etc., shall be at the nominal values for normal operation as specified in the manufacturer's written instructions. If the analyzer is used to sample more than one source (stack), this test shall be repeated for each sampling point.

6.3.2 Response Time Test Procedure.

Introduce zero gas into the continuous monitoring system sampling interface or as close to the sampling interface as possible. When the system output reading has stabilized, switch quickly to a known concentration of gas at 90 percent of span. Record the time from concentration switching to 95 percent of final stable response. After the system response has stabilized at the upper level, switch quickly to a zero gas. Record the time from concentration switching to 95 percent of final stable response. Alternatively, for nonextractive continuous monitoring systems, the highest available calibration gas concentration shall be switched into and out of the sample path and response times recorded. Perform this test sequence three (3) times. For each test, record the results on the data sheet shown in Figure 3-3.

7. Calculations, Data Analysis, and Reporting.

7.1 Procedure for determination of mean values and confidence intervals.

7.1.1 The mean value of a data set is calculated according to equation 3-1.

$$\bar{x}=\frac{1}{n}\sum_{i=1}^{n}x_i \qquad \text{Equation 3-1}$$

where:

x_i = absolute value of the measurements,
Σ = sum of the individual values,
$\bar{x}$ = mean value, and
n = number of data points.

7.2.1 The 95 percent confidence interval (two-sided) is calculated according to equation 3-2:

$$C.I._{95}=\frac{t_{.975}}{n\sqrt{n-1}}\sqrt{n(\Sigma x_i^2)-(\Sigma x_i)^2} \qquad \text{Equation 3-2}$$

where:

ΣX = sum of all data points,
$t_{.975} = t_{1-\alpha/2}$, and
$C.I._{95}$ = 95 percent confidence interval estimates of the average mean value.

Values for $t_{.975}$

n	$t_{.975}$
2	12.706
3	4.303
4	3.182
5	2.776
6	2.571
7	2.447
8	2.365
9	2.306
10	2.262
11	2.228
12	2.201
13	2.179
14	2.160
15	2.145
16	2.131

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The values in this table are already corrected for n–1 degrees of freedom. Use n equal to the number of samples as data points.

7.2 Data Analysis and Reporting.

7.2.1 Zero Drift (2-hour). Using the zero concentration values measured each two hours during the field test, calculate the differences between the consecutive two-hour readings expressed in ppm. Calculate the mean difference and the confidence interval using equations 3–1 and 3–2. Record the sum of the absolute mean value and the confidence interval on the data sheet shown in Figure 3–1.

7.2.2 Zero Drift (24-hour). Using the zero concentration values measured every 24 hours during the field test, calculate the differences between the zero point after zero adjustment and the zero value 24 hours later just prior to zero adjustment. Calculate the mean value of these points and the confidence interval using equations 3–1 and 3–2. Record the zero drift (the sum of the absolute mean and confidence interval) on the data sheet shown in Figure 3–2.

7.2.3 Calibration Drift (2-hour). Using the calibration values obtained at two-hour intervals during the field test, calculate the differences between consecutive two-hour readings expressed as ppm. These values should be corrected for the corresponding zero drift during that two-hour period. Calculate the mean and confidence interval of these corrected difference values using equations 3–1 and 3–2. Do not use the differences between non-consecutive readings. Record the sum of the absolute mean and confidence interval upon the data sheet shown in Figure 3–1.

7.2.4 Calibration Drift (24-hour). Using the calibration values measured every 24 hours during the field test, calculate the differences between the calibration concentration reading after zero and calibration adjustment and the calibration concentration reading 24 hours later after zero adjustment but before calibration adjustment. Calculate the mean value of these differences and the confidence interval using equations 3–1 and 3–2. Record the sum of the absolute mean and confidence interval on the data sheet shown in Figure 3–2.

7.2.5 Operational Test Period. During the 168-hour performance and operational test period, the continuous monitoring system shall not receive any corrective maintenance, repair, replacement, or adjustment other than that clearly specified as required in the manufacturer's written operation and maintenance manuals as routine and expected during a one-week period. If the continuous monitoring system operates within the specified performance parameters and does not require corrective maintenance, repair, replacement or adjustment other than as specified above during the 168-hour test period, the operational period will be successfully concluded. Failure of the continuous monitoring system to meet this requirement shall call for a repetition of the 168 hour test period. Portions of the test which were satisfactorily completed need not be repeated. Failure to meet any performance specifications shall call for a repetition of the one-week performance test period and that portion of the testing which is related to the failed specification. All maintenance and adjustments required shall be recorded. Output readings shall be recorded before and after all adjustments.

7.2.6 Response Time. Using the data developed under paragraph 5.3, calculate the time interval from concentration switching to 95 percent to the final stable value for all upscale and downscale tests. Report the mean of the three upscale test times and the mean of the three downscale test times. The two average times should not differ by more than 15 percent of the slower time. Report the slower time as the system response time. Record the results on Figure 3–3.

8. References.

8.1 "Performance Specifications for Stationary Source Monitoring Systems for Gases and Visible Emissions," Environmental Protection Agency, Research Triangle Park, N.C., EPA–650/2–74–013, January 1974.

8.2 "Experimental Statistics," Department of Commerce, National Bureau of Standards Handbook 91, 1963, pp. 3–31, paragraphs 3–3.1.4.

Data Set No.	Time		Date	Zero Reading	Zero Drift (ΔZero)	Span Reading	Span Drift (ΔSpan)	Calibration Drift (ΔSpan-ΔZero)
	Begin	End						
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								

Zero Drift = [Mean Zero Drift* ______ + CI (Zero) ______] = ______.
Calibration Drift = [Mean Span Drift* ______ + CI (Span ______] = ______.
*Absolute Value.

Figure 3-1. Zero and Calibration Drift (2 Hour).

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Date and Time	Zero Reading	Zero Drift (ΔZero)	Span Reading (After zero adjustment)	Calibration Drift (ΔSpan)

Zero Drift = [Mean Zero Drift* _______ + C.I. (Zero) _______]

= ________.

Calibration Drift = [Mean Span Drift* _________ + C.I. (Span) _________]

= __________.

* Absolute value

Figure 3-2. Zero and Calibration Drift (24-hour)

Date of Test ____________

Span Gas Concentration ________ ppm

Analyzer Span Setting ________ ppm

Upscale
1. ________ seconds
2. ________ seconds
3. ________ seconds

Average upscale response ________ seconds

Downscale
1. ________ seconds
2. ________ seconds
3. ________ seconds

Average downscale response ________ seconds

System average response time (slower time) = ________ seconds

% deviation from slower system average response = $\frac{\text{average upscale minus average downscale}}{\text{slower time}}$ x 100%

= ____________.

Figure 3-3. Response

[40 FR 46259, Oct. 6, 1975; 40 FR 59204, 59205, Dec. 22, 1975, as amended at 42 FR 5937, Jan. 31, 1977]

APPENDIX C—DETERMINATION OF EMISSION RATE CHANGE

1. *Introduction.*

1.1 The following method shall be used to determine whether a physical or operational change to an existing facility resulted in an increase in the emission rate to the atmosphere. The method used is the Student's *t* test, commonly used to make inferences from small samples.

2. *Data.*

2.1 Each emission test shall consist of n runs (usually three) which produce n emission rates. Thus two sets of emission rates are generated, one before and one after the change, the two sets being of equal size.

2.2 When using manual emission tests, except as provided in § 60.8(b) of this part, the reference methods of Appendix A to this part shall be used in accordance with the procedures specified in the applicable subpart both before and after the change to obtain the data.

2.3 When using continuous monitors, the facility shall be operated as if a manual emission test were being performed. Valid data using the averaging time which would be required if a manual emission test were being conducted shall be used.

3. *Procedure.*

3.1 Subscripts a and b denote prechange and postchange respectively.

3.2 Calculate the arithmetic mean emission rate, Ē, for each set of data using Equation 1.

$$E=\frac{\sum_{i=1}^{n} E_i}{n}=\frac{E_1+E_2\ldots+E_n}{n} \qquad (1)$$

where:

E_i=Emission rate for the *i* th run.
n=number of runs

3.3 Calculate the sample variance, S^2, for each set of data using Equation 2.

$$S^2=\frac{\sum_{i=1}^{n}(E_i-E)^2}{n-1}=\frac{\sum_{i=1}^{n}E_i^2-\left(\sum_{i=1}^{n}E_i\right)^2\Big/n}{n-1} \qquad (2)$$

3.4 Calculate the pooled estimate, S_p, using Equation 3.

$$S_p=\left[\frac{(n_a-1)\ S_a^2+(n_b-1)\ S_b^2}{n_a+n_b-2}\right]^{1/2} \qquad (3)$$

3.5 Calculate the test statistic, *t*, using Equation 4.

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APPENDIX B

EXCERPTS OF RELEVANT STATE REGULATIONS

4.1 Visible Emissions.

4.1.1 Visible Emissions Restrictions for Stationary Sources.

(a) No person shall discharge into the atmosphere from any single source of emission whatsoever any air contaminant of a shade or density darker than that designated as No. 1 on the Ringelmann chart or 20 percent opacity.

(b) A person may discharge into the atmosphere from any single source of emission for a period or periods aggregating not more than three minutes in any 60 minutes air contaminants of a shade of density not darker than that designated as No. 3 on the Ringelmann chart or 60 percent opacity.

4.9 Coke Ovens. (Adopted July 26, 1972. Amended May 28, 1974)

4.9.1 Applicability. The provisions of this Part shall apply to the production of coke in existing conventional slot-oven coke batteries with the exception of Section 4.9.10 which applies to new batteries.

4.9.2 Unloading and Transfer of Coal and Coke. Every person operating coke ovens shall apply all reasonable measures to prevent emissions from coal unloading, transfer, and coke transfer.

4.9.3 Charging. There shall be no visible emissions during the charging cycle from the charging holes or the larry car of any battery with an opacity which is greater than twenty percent (20%) (equivalent to Ringelmann No. 1) except for an average period or periods not to exceed three (3) minutes of any consecutive sixty (60) minutes on batteries with less than seventy (70) ovens nor more than four (4) minutes of any consecutive sixty (60) minutes on batteries with seventy (70) ovens or more.

4.9.4 Pushing. There shall be no visible emissions during the pushing cycle, other than water mist or vapor, with an opacity which is greater than forty percent (40%) (equivalent to Ringelmann No. 2) for more than one (1) push per hour per battery or for more than two (2) consecutive pushes from the same oven.

4.9.5 Topside Emissions.

(a) Any leak discovered on the topside of a battery shall be wet sealed or the oven shall not be recharged until the necessary repairs are made.

(b) At no time shall there be leaks in more than ten percent (10%) of the offtake piping and no more than five percent (5%) of the charging hole lids on any one battery.

4.9.6 Coke Oven Doors.

(a) There shall be no visible emissions, except non-smoking flame, from any opening on the coke oven doors from more than fifteen percent (15%) of the coke oven doors on any battery at any time.

(b) If a self-sealing door fails to seal during the coking cycle, it shall be adjusted, repaired, or replaced prior to a subsequent charge of oven.

5.1 Fuel Combustion.

5.1.1 (a) Sulfur Dioxide Category I Counties. No person shall cause or permit the operation of a fuel burning installation in a Sulfur Dioxide Category I County or in Jefferson County in such a manner that sulfur oxides, measured as sulfur dioxide, are emitted in excess of 1.8 pounds per million BTU heat input. (Amended March 25, 1975)

(b) Sulfur Dioxide Category II Counties. No person shall cause or permit the operation of a fuel burning installation in a Sulfur Dioxide Category II County in such a manner that sulfur oxides, measured as sulfur dioxide, are emitted in excess of 4.0 pounds per million BTU heat input. (Amended March 25, 1975)

5.1.5 No person shall cause or permit the emission or combustion of any refinery process gas stream that contains H_2S in concentrations greater than 150 ppm without removal of the hydrogen sulfide in excess of this concentration.

5.2 Sulfuric Acid Plants. (Amended April 22, 1975)

5.2.1 Applicability. This Section applies to existing sulfuric acid plants operating as of January 18, 1972.

(a) No person shall cause or permit sulfur dioxide tail gas emissions from sulfuric acid manufacturing plants to exceed 27 pounds per ton of 100 percent sulfuric acid produced; provided, however, that no sulfuric acid manufacturing plant emitting less than 27 pounds per ton of 100 percent sulfuric acid produced shall be allowed to increase its emission rate.

(b) No person shall cause or permit tail gas acid mist emissions to exceed 0.5 pounds per ton of sulfuric acid produced, and the sulfur trioxide emissions are not to exceed 0.2 pounds per ton of sulfuric acid produced.

5.2.2 Applicability. This Section applies to all sulfuric acid plants not included in Section 5.2.1.

(a) No person shall cause or permit the discharge into the atmosphere of sulfur dioxide in excess of 4 pounds per ton of sulfuric acid produced, maximum two-hour average.

(b) No person shall cause or permit the discharge into the atmosphere of acid mist which is in excess of 0.15 pounds per ton of acid produced maximum two-hour average, expressed as H_2SO_4.

5.2.3 There shall be installed, calibrated, maintained, and operated in any sulfuric acid production unit subject to the provisions of this Part, an instrument for continuously monitoring and recording emissions of sulfur dioxide.

5.2.4 Any instrument and sampling system installed and used pursuant to this Part shall be subject to the approval of the Director.

5.3 Petroleum Production. (Amended May 25, 1976)

5.3.1 Applicability. This regulation applies to facilities that handle natural gas or refinery gas that contains more than 0.10 grain of hydrogen sulfide per standard cubic foot (SCF).

5.3.2 No person shall cause or permit the emission of a process gas stream containing more than 0.10 grain of hydrogen sulfide per SCF into the atmosphere unless it is properly burned to maintain the ground level concentrations of hydrogen sulfide to less than 20 parts per billion beyond plant property limits, averaged over a 30-minute period.

5.3.3 No person shall cause or permit the sulfur oxide emission from any facility designed to dispose of or process natural gas or refinery gas containing more than 0.10 grain hydrogen sulfide per standard cubic foot to exceed the following:

CATEGORY I COUNTIES

Available Sulfur (Long Tons/Day)	Permitted Emissions of Sulfur Dioxide
Up to 5	No Limit
5 to 35	373 lbs/hour
35 to 75	0.10 lbs. SO_2/lb. S processed
Over 75	0.08 lbs. SO_2/lb. S processed

ALABAMA

5.3.3

CATEGORY II COUNTIES

Available Sulfur (Long Tons/Day)	Permitted Emissions of Sulfur Dioxide
Up to 10	No Limit
10 to 50	560 lbs/hour
50 to 100	0.10 lbs. SO_2/lb. S processed
Over 100	0.08 lbs. SO_2/lb. S processed

The allowable emissions of sulfur dioxide are increased as follows to allow for dry acid gas streams containing less than 60 percent hydrogen sulfide:

Mol Percent of Hydrogen Sulfide in Dry Acid Gas	Additional SO_2 Emissions Allowed
50% but less than 60%	.02 lbs. SO_2/lb. S processed
40% but less than 50%	.04 lbs. SO_2/lb. S processed
30% but less than 40%	.06 lbs. SO_2/lb. S processed
20% but less than 30%	.10 lbs. SO_2/lb. S processed
Less than 20%	Must utilize the best available control technology, with consideration to the technical practicability and economic reasonableness of reducing or eliminating the emissions from the facility.

5.3.4 (a) For purposes of this Part, the following counties are classified as Category I Counties: Jackson, Jefferson, and Mobile.

5.3.4 (b) For purposes of this Part, those counties not listed in paragraph 5.3.4(a) are classified as Category II Counties.

5.3.5 Compliance with this Part shall be determined by both material balances and stack sampling. New plants are required either to install monitors to continuously determine the sulfur oxide emissions in terms of mass per unit of time or to determine the sulfur oxide emissions by other means approved by the Director.

5.4 Kraft Pulp Mills. (Adopted July 26, 1972)

5.4.1 Applicability. This Part applies to manufacturing facilities for the pulping of wood and the preparation and recovery of associated chemicals by the kraft process, including combined recovery systems serving other processes such as neutral sulfite pulping.

5.4.2 No person shall cause or permit the emissions of total reduced sulfur (TRS) from recovery furnaces, lime kilns, digestors, and multiple effect evaporators to exceed 1.2 pounds (expressed as hydrogen sulfide on a dry gas basis) per ton of air-dried pulp from kraft pulp mills.

8.1 New Combustion Sources.

8.1.1 No person shall cause or permit emissions of nitrogen oxides from a new gas-fired boiler with a capacity of 250 million BTU/hr or more in excess of 0.20 pounds per million BTU of heat input per hour.

8.1.2 No person shall cause or permit emissions of nitrogen oxides from a new oil-fired boiler with a capacity of 250 million BTU/hr or more in excess of 0.30 pounds per million BTU of heat input per hour.

8.1.3 No person shall cause or permit emission of nitrogen oxides from a new coal-fired boiler with a capacity of 250 million BTU per hour or more in excess of 0.7 pounds per million BTU of heat input per hour.

8.1.4 For purposes of this Part, the total heat input from all similar fuel combustion units at a plant or premises shall be used for determining the maximum allowable emission of nitrogen oxides that passes through a stack or stacks.

8.2 Nitric Acid Manufacturing. No person shall cause or permit the emission of nitrogen oxides calculated as nitrogen dioxide, from nitric acid manufacturing plants in excess of 5.5 pounds per ton of 100 percent acid produced.

12.1 General

(a) The Environmental Protection Agency Regulations on Standards of Performance for New Stationary Source (40 CFR, Part 60) designated in Part 12.2 are incorporated by reference as they exist on the date of adoption and promulgation by the Commission into these regulations as amended by the word or phrase substitutions given in Part 12.3. References for specific documents containing the complete text of subject regulations are given in Appendix C.

12.1

(b) In the event of any conflict between the regulations contained in this Chapter and regulations contained in other Chapters, the regulations of Chapter 12 will take precedence for standards of performance for new stationary sources unless the existing regulations are more stringent.

(c) Definitions. For purposes of this Chapter, the definitions listed in Section 60.2 Subpart A, Part 60, Title 40 of the Code of Federal Regulations will apply.

12.2 Designated Standards of Performance.

12.2.1 Subpart D - Fossil Fuel-Fired Steam Generators (units of more than 63 million kcal per hour heat input).

12.2.2 Subpart E - Incinerators (units of more than 50 tons per day charging rate).

12.2.3 Subpart F - Portland Cement Plants (kiln, clinker cooler, raw mill system, finish mill system, raw mill dryer, raw material storage, conveyor transfer points, bagging and bulk loading and unloading systems).

12.2.4 Subpart G - Nitric Acid Plants (nitric acid production units).

12.2.5 Subpart H - Sulfuric Acid Plants (sulfuric acid production units).

12.2.6 Subpart I - Asphalt Concrete Plants (dryers, systems for screening, handling, storing, and weighing hot aggregate; systems for loading, transferring, and storing mineral filler; systems for mixing asphalt concrete; and the loading, transfer and storage systems associated with emission control systems).

12.2.7 Subpart J - Petroleum Refineries (fluid catalytic cracking unit catalyst regenerators, fluid catalytic cracking unit incinerator-waste heat boilers and fuel gas combustion devices).

12.2.8 Subpart K - Storage Vessels for Petroleum Liquids (storage vessels with a capacity greater than 40,000 gallons).

12.2.9 Subpart L - Secondary Lead Smelters (pot furnaces of more than 550 pounds charging capacity, blast (cupola) furnaces and reverberatory furnaces).

12.2.10 Subpart M - Secondary Brass and Bronze Ingot Production Plants (reverberatory and electric furnaces of 2,205 pounds or greater production capacity and blast (cupola) furnaces of 550 pounds per hour or greater production capacity).

12.2.11 Subpart N - Iron and Steel Plants (basic oxygen process furnace).

12.2.12 Subpart O - Sewage Treatment Plants (incinerators which burn the sewage produced by municipal sewage treatment facilities).

12.2.13 Subpart P - Primary Copper Smelters (dryer, roaster, smelting furnace, and copper converter).

12.2.14 Subpart Q - Primary Zinc Smelters (roaster and sintering machine).

12.2.15 Subpart R - Primary Lead Smelters (sintering machine, sintering machine discharge end, blast furnace, dross reverberatory furnace, electric smelting furnace, and converter).

12.2.16 Subpart S - Primary Aluminum Reduction Plants (potroom groups and anode bake plants).

12.2.17 Subpart T - Wet Process Phosphoric Acid Plants (any combination of reactors, filters, evaporators, and hotwells).

12.2.18 Subpart U - Superphosphoric Acid Plants (any combination of evaporators, hotwells, acid sumps, and cooling tanks).

12.2.19 Subpart V - Diammonium Phosphate Plants (any combination of reactors, granulators, dryers, coolers, screens, and mills).

12.2.20 Subpart W - Triple Superphosphate Plants - (any combination of mixers, curing belts (dens), reactors, granulators, dryers, cookers, screens, mills, and facilities which store run-of-pile triple superphosphate).

12.2.21 Subpart X - Granular Triple Superphosphate Storage Facilities - (any combination of storage or curing piles, conveyors, elevators, screens, and mills).

12.2.22 Subpart Y - Coal Preparation Plants (units which process more than 200 tons per day: thermal dryers, pneumatic coal-cleaning equipment (air tables), coal processing and conveying equipment (including breakers and crushers), coal storage systems, and coal transfer and loading systems).

12.2.23 Reserved.

12.2.24 Subpart AA - Steel Plants (Electric arc furnaces and dust-handling equipment).

Chapter 14
Continuous Monitoring
Requirements for Existing Sources

Adopted October 26, 1976

14.1 Definitions

14.1.1 For the purposes of this Chapter, the following terms will have the meanings ascribed in this part:

(a) "Emission standard" means a regulation (or portion thereof) setting forth an allowable rate of emissions, level of opacity, or prescribing equipment or fuel specifications that result in control of air pollution emissions.

(b) "Capacity factor" means the ratio of the average load on a machine or equipment for the period of time considered to the capacity rating of the machine or equipment.

(c) "Excess emissions" means emissions of an air pollutant in excess of an emission standard.

(d) "Sulfuric acid plant" means any facility producing sulfuric acid by the contact process by burning elemental sulfur, alkylation acid, hydrogen sulfide, or acid sludge, but does not include facilities where conversion to sulfuric acid is utilized primarily as a means of preventing emissions to the atmosphere of sulfur dioxide or other sulfur compounds.

(e) "Fossil fuel-fired steam generator" means a furnace or boiler used in the process of burning fossil fuel for the primary purpose of producing steam by heat transfer.

14.2 Emission Monitoring and Reporting Requirements

14.2.1 Sources in the following categories which initiated construction prior to August 17, 1971, are subject to the requirements of this Chapter:

(a) Fossil fuel-fired steam generators

(b) Sulfuric acid plants

Sources in these categories which are constructed after August 17, 1971, are subject to the emission monitoring requirements of Chapter 12. This Chapter is intended to supplement existing regulations, and no part thereof shall be construed to interfere with the enforcement of other provisions of the Alabama Air Pollution Control Rules and Regulations.

14.2.2 The Director shall require the owner or operator of an emission source listed in Section 14.2.1 to install, calibrate, operate, and maintain all monitoring equipment necessary for continuously monitoring the pollutants specified in Sections 14.2.3 and 14.2.4. The specific source categories listed in Section 14.2.1 must complete the installation and performance testing of monitoring equipment and begin monitoring and recording within eighteen months from the date of the Environmental

(Over)

Protection Agency's approval of these regulations. Within 6 months of such approval, all affected sources must present a detailed plan for complying with the requirements of this Chapter to the Director. The Director shall condition written approval of such plan upon the requirement that the plan will meet the minimum reporting requirements set forth in Divisions 4 and 5 of Appendix P of 40 CFR 51. More stringent reporting procedures may be required in the Director's discretion.

14.2.3 Fossil fuel-fired steam generators, as defined in this Chapter, with an annual average capacity factor of greater than thirty percent, as reported to the Federal Power Commission for calendar year 1974, or as otherwise demonstrated to the Director by the owner or operator, shall conform with the following monitoring requirements when such facility is subject to an emission standard for the pollutant in question:

(a) A continuous monitoring system for the measurement of opacity shall be installed, calibrated, maintained, and operated by the owner or operator of any such steam generator of greater than 250 million BTU per hour heat input except where:

(1) gaseous fuel is the only fuel burned, or

(2) oil or a mixture of gas and oil are the only fuels burned and the source is able to comply with the applicable particulate matter and opacity regulations without utilization of particulate matter collection equipment, and where the source has never been found, through any administrative or judicial proceedings, to be in violation of any visible emission standard of the applicable plan.

(b) A continuous monitoring system for the measurement of sulfur dioxide shall be installed, calibrated, maintained, and operated on any fossil fuel-fired steam generator of greater than 250 million BTU per hour heat input which has installed equipment designed for the desulfurization of flue gas.

(c) A continuous monitoring system for the measurement of the percent oxygen or carbon dioxide in stack gases shall be installed, calibrated, operated, and maintained on fossil fuel-fired steam generators where measurements of oxygen or carbon dioxide in the flue gas are required to convert sulfur dioxide continuous emission monitoring data, to units of the emission standard in Chapter 5.

14.2.4 Sulfuric acid plants, as defined in this Chapter, with greater than 300 tons per day production capacity, the production being expressed as 100 percent acid, shall install, calibrate, maintain, and operate a continuous monitoring system for the measurement of sulfur dioxide for each sulfuric acid producing facility within such plant.

14.2.5 All monitoring equipment specified in this Chapter shall meet the performance specifications described in Appendix B of 40 CFR 60, except that the Director may from time to time specify different data averaging times and sampling intervals to permit accurate determinations of compliance with specific Air Pollution Control Rules and Regulations.

The monitoring equipment shall also be installed, calibrated, operated, and maintained in accordance with the procedures in Appendix B of 40 CFR 60 and the minimum specifications of Division 3 in Appendix P of 40 CFR 51.

14.3 Monitoring System Malfunction

14.3.1 Malfunctions of a monitoring system required in this Chapter which last more than 48 hours must be reported as expeditiously as possible to the Director in a written report. This report should include statements as to the time the monitor malfunctioned, the nature of the malfunction, the corrective action being taken, the estimated repair time, and any other information needed to demonstrate to the Director that the malfunction was unavoidable. The Director shall be informed of the time at which the monitor again becomes operational.

14.3.2 The Director may temporarily exempt an owner or operator from the monitoring and reporting requirements of this Chapter if it is demonstrated to the Director's satisfaction that the malfunction was unavoidable and is being repaired as expeditiously as possible.

14.4 Alternate Monitoring and Reporting Requirements

14.4.1 Alternative monitoring and reporting requirements may be approved by the Director on a case-by-case basis, provided the following statements and explanations are contained in a written request to the Director:

(a) the basis or reason that alternative monitoring and reporting requirements are desirable and necessary;

(b) a proposal of alternative monitoring and reporting requirements;

(c) any other information needed by the Director to make a determination of the desirability of alternative requirements.

14.4.2 Request for alternative monitoring and reporting requirements may be made in certain situations, including, but not limited to, the following:

(a) when installation of a continuous monitoring system or device required by this Chapter would not provide accurate determinations of emissions;

(b) when the affected facility is operated less than 30 days per year;

(c) when effluents from two or more sources of significantly different design and operating characteristics are combined before release to the atmosphere or when the effluent from one source is released to the atmosphere through more than one point;

(Over)

(d) when the Director determines that the requirements prescribed by this Chapter would impose an extreme economic burden on the source owner or operator. The determination of an extreme economic burden shall be made on the basis of whether meeting the requirements prescribed by this Chapter would produce serious hardship without equal or greater benefit to the public;

(e) when the monitoring systems prescribed by this Chapter cannot be installed due to physical limitations at the facility. The determination of such limitations shall be made on the basis of whether meeting the requirements prescribed by this Chapter would necessitate significant reconstruction of the facility.

14.4.3 The Director may require the submission of additional information as he deems appropriate to evaluate the request for alternative requirements. Upon making a determination that the source should be subject to alternative monitoring and reporting requirements, the Director may approve either the proposed alternative monitoring and reporting requirements or any other monitoring and reporting requirements that he deems appropriate and feasible.

14.5 Exemptions and Extensions

14.5.1 The Director may exempt any source from the requirements of this Chapter if such source is scheduled for permanent shutdown by October 6, 1980, provided that adequate evidence and guarantees are provided to clearly show that the source will cease operations prior to such date.

14.5.2 The Director may grant reasonable extensions of the time provided for installation of monitors for facilities unable to meet the prescribed 18-month time frame, provided that the owner or operator of such facility demonstrates that good faith efforts have been made to obtain and install such devices within the prescribed timeframe.

14.5.3 If, prior to September 11, 1974, an affected source purchased an emission monitor which does not conform to the requirements of Appendix B of 40 CFR 60, then the source may be granted a five-year period from the date of the Environmental Protection Agency's approval of this revision, during which time the monitor installed on that source is exempt from applicable performance specifications.

18 AAC 50.040. INCINERATORS. (a) Visible emissions, excluding condensed water vapor, from incinerators may not result in a reduction of visibility through the exhaust effluent greater than

(1) 20 percent for those incinerators installed on or after July 1, 1972;

(2) 40 percent for incinerators installed and operating prior to July 1, 1972. These incinerators shall comply with the requirements of (a)(1) of this section after July 1, 1975;

(3) For a period or periods aggregating more than three minutes in any hour.

18 AAC 50.050. INDUSTRIAL PROCESSES AND FUEL BURING EQUIPMENT. (a) Visible emissions, excluding condensed water vapor, from industrial processes or fuel burning equipment may not result in a reduction of visibility through the exhaust effluent of greater than 20 percent for a period or periods aggregating more than three minutes in any hour.

(c) Sulfur compound emissions from industrial processes or fuel burning equipment may not exceed 500 ppm expressed as SO_2.

18 AAC 50.060. PULP MILLS. (a) Air contaminant emissions from pulp mills may not exceed, based on 24-hour averages and each ton of pulp produced:

(1) 20 pounds of sulfur oxides from sulfite pulp mills, expressed as SO_2, from all blow pits, washer vents, storage tanks, digester relief and recovery systems;

(3) five ppm of total reduced sulfur, expressed as H_2S on a dry basis, from each kraft pulp mill recovery furnace stack.

(b) Non-condensibles from kraft pulp mill digesters and multiple effect evaporators shall be treated to reduce emissions of total reduced sulfur to a level equal to that which would be obtained by the reduction achieved by thermal oxidation in a lime kiln.

(c) Operators shall maintain and operate continuous emission recording and ambient air monitoring devices as specified by the department. Data acquired shall be available for inspection by, and provided on a routine basis to, the department. (Eff. 5/26/72, Reg. 42)

Authority: AS 46.03.020(10)(A)
AS 46.03.140
AS 46.03.150

ARTICLE 3. PARTICULATE EMISSIONS FROM STATIONARY SOURCES

R9-3-301. Visible emissions: general

A. Except as otherwise provided in these regulations relating to specific types of sources, the opacity of any plume or effluent shall not be as great as nor greater than that designated as No. 2 on the Ringelmann chart or percent opacity equivalent to No. 2 Ringelmann, except when the provisions of R9-3-106 apply.

R9-3-303. Incineration

A. Notwithstanding the provisions of R9-3-301, no person shall cause, suffer, or allow or permit to be emitted into the atmosphere, from any type of incinerator, smoke fumes, gases, particulate matter or other gas-borne material of an appearance, density, opacity or shade which exceeds 20 percent of the opacity scale except during the times specified in Subsection D of this section.

D. Incinerators shall be exempt from the above opacity and emission requirements as follows:

1. For multiple chamber incinerators, controlled atmosphere incinerators, fume incinerators, afterburners, or other unspecified types of incinerators, such exemption shall be for not more than 30 seconds in any 60 minute period.

2. Wood waste burners and air curtain destructors shall be exempt as follows:

a. For a period once each day for the purpose of building a new fire but not to exceed 60 minutes.

b. For an upset of operations not to exceed 3 minutes in any 60 minute period.

R9-3-304. Fuel-burning equipment

A. This regulation applies to installations in which fuel is burned for the primary purpose of producing power, steam, hot water, hot air or other liquids, gases or solids and in the course of doing so the products of combustion do not come into direct contact with process materials. When any products or by-products of a manufacturing process are burned for the same purpose or in conjunction with any fuel, the same maximum emission limitations shall apply, except wood waste burners as regulated under R9-3-303.

E. Notwithstanding the provisions of R9-3-301, no person shall cause, suffer, allow or permit to be emitted into the atmosphere from any stationary rotating machinery, smoke for any period greater than ten consecutive seconds, the appearance or density of which is as dark or darker than 40 percent opacity. Visible emissions when starting cold equipment shall be exempt from this requirement for the first ten minutes.

ARTICLE 3

R9-3-306. Portland cement plants located in Phoenix-Tucson Air Quality Control Region

A. No person shall cause, suffer, allow or permit the discharge of particulate matter from the kilns of any cement plant located in the Phoenix-Tucson Air Quality Control Region which is:

1. In excess of 0.30 pounds per ton of feed to the kilns, maximum two-hour average.

2. Greater than 20 percent opacity.

B. No person shall cause, suffer, allow or permit the discharge of particulate matter from the clinker coolers of any cement plant located in the Phoenix-Tucson Region which is:

1. In excess of 0.10 pounds per ton of feed to the kilns, maximum two-hour average.

2. Ten percent opacity or greater.

C. No person shall cause, suffer, allow or permit the discharge of particulate matter from any equipment other than the kiln or clinker cooler of any cement plant located in the Phoenix-Tucson Air Quality Control Region which is greater than 10 percent opacity or exceeds the amounts allowable under R9-3-305.B.

R9-3-308. Heater-planers

A. No person shall cause, suffer, allow or permit to be emitted into the ambient air, from any heater-planer operated for the purpose of reconstructing asphalt pavement, smoke which is of an opacity greater than 20 percent.

B. Three minutes upset time in any one hour during which the smoke exceeds 20 percent opacity will not constitute a violation of this Regulation.

ARTICLE 4. SULFUR COMPOUND EMISSIONS

R9-3-401. COPPER SMELTERS

A. [Deleted and reserved for new copper smelters; December 22, 1976]

B. EXISTING COPPER SMELTERS

1. No owner or operator of any existing copper smelter shall discharge or cause the discharge of sulfur compounds into the ambient air in excess of the applicable emission limits set forth in paragraphs 2. and 4. below except as permitted by a temporary conditional permit, and no owner or operator of any existing copper smelter shall operate in a manner such as to cause a violation of the ambient air quality standards in R9-3-202.

2. Compliance with the sulfur emission limit listed for each smelter in this paragraph can only be maintained by the continuous operation of that smelter's sulfur removal equipment at its maximum feasible efficiency.

a. For the copper smelter of Magma Copper Company, San Manuel Division, the sulfur emission limit shall be an average of 148 tons per day in any calendar month.

b. For the copper smelter of ASARCO, Inc., Hayden, the sulfur emission limit shall be an average of 82 tons per day in any calendar month.

c. For the copper smelter of Phelps Dodge Corporation, Douglas Reduction Works, the sulfur emission limit shall be an average of 120 tons per day in any calendar month.

d. For the copper smelter of Phelps Dodge Corporation, Morenci Branch, the sulfur emission limit shall be an average of 145 tons per day in any calendar month.

e. For the copper smelter of Inspiration Consolidated Copper Company, the sulfur emission limit shall be an average of 85 tons per day in any calendar month.

f. For the copper smelter of Phelps Dodge Corporation, New Cornelia Branch, the sulfur emission limit shall be an average of 32 tons per day in any calendar month.

g. For the copper smelter of Kennecott Copper Corporation, Ray Mines Division, the sulfur emission limit shall be an average of 68 tons per day in any calendar month.

3. The ability of a particular smelter's sulfur dioxide removal equipment to maintain ambient air quality standards shall be demonstrated by a one-year air quality test program which in the case of all smelters other than Kennecott Copper Corporation, Ray Mines Division, shall commence on the date that the director determines that all such equipment necessary to meet ambient air quality and emission limits established by Paragraph 1. has been installed and is in operation.

The one-year demonstration shall be subject to the following conditions:

a. The demonstration for Kennecott Copper Corporation, Ray Mines Division, shall be conducted during the same one-year period as the demonstration is conducted for the Hayden Smelter of ASARCO, Inc.

b. The demonstration shall utilize the sulfur dioxide monitoring network required by Appendix 7 or, in the case of Inspiration Consolidated Copper Company, shall utilize the monitors in operation on the effective date of this regulation supplemented by whatever monitors the department may install to determine the capability of the smelter to meet the ambient air quality standards. The location of monitors described in this paragraph and the length of time that those monitors remain at a location shall be determined by the director.

c. If, at the conclusion of the one-year demonstration, the director determines that sulfur removal equipment alone is not adequate to maintain ambient air quality standards, then the director shall adopt rules and regulations specifying those additional measures necessary to achieve ambient air quality standards. Such measures may include dispersion technology and continued use of a supplementary control system.

4. The director has determined that for all existing smelters listed in paragraph 2. above, except Kennecott Copper Corporation, Ray Mines Division, and the Inspiration Consolidated Copper Company, compliance with the emission limits in paragraph 2. above would be either economically unreasonable or technologically unsound. Furthermore, the director has determined that each existing smelter has installed all sulfur removal equipment that is economically reasonable and technologically sound for the smelter. Until the director is able to make a finding, in accordance with paragraph 5. below, that the installation of sulfur removal technology necessary to comply with the emission limits in paragraph 2. is both economically reasonable and technologically sound for a smelter listed in this paragraph, and until the date established for installation of such technology, the following existing copper smelters shall comply with the interim emission limits established in subparagraph a. and the operating conditions established in subparagraph b. below.

a. Existing copper smelters other than Kennecott Copper Corporation, Ray Mines Division, and the Inspiration Consolidated Copper Company shall comply with the following interim emission limits:

i. For the copper smelter of Magma Copper Company, San Manuel Division, the sulfur emission limit shall be an average of 448 tons per day in any calendar month.

ii. For the copper smelter of ASARCO, Inc., Hayden, the sulfur emission limit shall be an average of 301 tons per day in the calendar month.

iii. For the copper smelter of Phelps Dodge Corporation, Douglas Reduction Works, the sulfur emission limit shall be an average of 561 tons per day in any calendar month.

iv. For the copper smelter of Phelps Dodge Corporation, Morenci Branch, the sulfur emission limit shall be an average of 407 tons per day in any calendar month.

v. For the copper smelter of Phelps Dodge Corporation, New Cornelia Branch, the sulfur emission limit shall be an average of 89 tons per day in any calendar month.

b. Existing copper smelters listed listed in subparagraph a. above shall comply with the following conditions of operation:

i. All presently installed sulfur removal equipment shall be operated at its maximum feasible efficiency.

ii. A supplementary control system shall be operated which meets the requirements of Appendix 7 to attain and maintain the ambient air quality standards for sulfur dioxide of R9-3-202. in the designated liability area for the smelters as defined in Appendix 7.

iii. The owner or operator of any smelter utilizing a supplementary control system to meet ambient air quality standards for sulfur dioxide shall undertake, finance or participate in financing research and development toward the implementation of new or improved sulfur removal and sulfur emissions monitoring technology applicable to that smelter. Prior to renewal of an operating permit, the owner or operator of such smelter shall deliver to the Bureau of Air Quality Control a report summarizing research progress during the preceding year. The report shall include a summary of research activities undertaken, or financed, or financially participated in by the owner or operator during the preceding year, the total cost of such research, the owner or operator's evaluation of new, improved, or innovative technology reported in the statement, and the owner or operator's plan for research activities during the year for which the renewal of the permit is sought.

5. The Bureau of Air Quality Control shall, prior to April 1 each year, deliver to the Director a report summarizing all reports received under the provision of subdivision 4.b.iii., together with any other information of which the bureau may have knowledge concerning the development and improvement of sulfur removal and sulfur emissions monitoring technology. The report shall include the bureau's evaluation of the practicability and capital costs of applying such new, improved, or innovative technology. When the director concludes, on the basis of any such annual report of the bureau, or other relevant data that the application of a new, improved or innovative sulfur removal technology may be economically reasonable and technologically sound for a particular smelter and that the application of that technology will allow the sulfur emissions established for that smelter as an interim emission limit under paragraph 4. to be significantly reduced, the director shall notice for public hearing a proposal to alter the interim emission limit placed on the smelter in paragraph 4. based on that smelter's application of the new, improved, or innovative technology.

a. If, on the basis of the record of the public hearing, the director finds that the new, improved, or innovative

a. If, on the basis of the record of the public hearing, the Director finds that the new, improved, or innovative sulfur removal technology is economically reasonable and technologically sound, the Director shall amend this regulation and the smelter's interim emission limit to reflect that finding. The Director shall modify the operating permit of the smelter to require the application of the approved technology.

b. In determining whether new, improved, or innovative technology is economically reasonable and technologically sound for a specific smelter, the Director shall consider at least the following:

i. The effect of the application of such technology on the public health.

ii. Capital costs of installing such technology.

iii. The effect on smelter operating costs of operating such technology.

iv. Water and energy consumption of such technology.

v. The improvement in sulfur removal efficiencies expected to result from the operation of such technology.

vi. The effect a requirement to install such technology would have on the continued economic viability of the smelter.

vii. The effect a requirement to install such technology would have on the continued economic viability of other enterprises, facilities, or the community dependent upon the smelter.

viii. The effect a requirement to install such technology would have on the safety of smelter employees.

ix. The availability of the technology.

x. The impact upon segments of the environment other than air.

6. Determination of compliance with the applicable emission limits in Paragraphs 2. and 4. shall be subject to the following conditions:

a. The emission limit shall apply to all process sulfur emitted into the ambient air from smelter processing units and sulfur control and removal equipment. The total monthly amount of sulfur emissions is equal to the weight of the total sulfur introduced into the smelting process in any calendar month minus the weight of all sulfur removed from the smelter process streams in that month in any physical form. Removed sulfur shall include but not be limited to sulfur contained in slag, blister copper, sulfuric acid, liquified sulfur dioxide, elemental sulfur, flue dust, precipitator dust, acid plant sludge, scrubber effluent, and absorption plant purge. All unremoved sulfur, including fugitive sulfur emissions, shall be considered as emissions to the ambient air.

b. Material balances for sulfur and copper described in Subparagraph a. above shall be obtained in accordance with procedures listed in Appendix 8.

c. Compliance with the average daily emission limits established by this Subsection is to be determined by dividing the total monthly emissions calculated under Subparagraph b. above by the number of operating days in the particular month. For purposes of this calculation the emissions and days or fractions of days during which a smelter is operating under a temporary conditional permit may be excluded.

d. Each owner or operator of a copper smelter shall report to the Director, not later than the fifteenth day of each month, the smelter material balance for sulfur and copper and ambient sulfur dioxide data for the preceding calendar month required by the smelter's operating permit. The data shall be reported in such form and detail as will enable the Director to determine total indicated emissions and ambient air quality for the month.

e. Each smelter shall install, calibrate, operate and maintain a measurement system for continuously monitoring and recording sulfur dioxide emissions from sulfur removal equipment.

f. At each point in the smelter facility where a means exists to bypass the sulfur removal equipment, such bypass shall be instrumented and monitored to detect and record all periods that the bypass is in operation. Each owner or operator of a copper smelter shall report to the Director, not later than the fifteenth day of each month, the information required to be recorded by this Subparagraph. Such report shall include an explanation for the necessity of the use of the bypass.

7. Where two or more smelters are so situated that the sulfur emissions of each may contribute significantly to violations of the standards set forth in R9-3-202 and if such standards are to be met by such smelters partially by means of supplementary control, the operators of such smelters are authorized and directed to consult with each other and to devise a plan for a coordinated supplementary control system that will meet the applicable standards and will allocate fairly among the participating smelters the extent and timing of the necessary intermittent sulfur emission curtailment. Such a plan shall be in writing and shall be submitted for approval to the Director, in case of an application for an operating permit, or the hearing board, in the case of an application for a conditional operating permit. The Director or the hearing board may reject a proposed plan in whole or in part and may condition its approval upon the acceptance by the parties of specific modifications or amendments. No plan for a coordinated supplementary control system shall be carried out until it has been approved by the Director or the hearing board.

Historical Note

Amended eff. Dec. 22, 1976 (Supp. 76-5).

R9-3-402. Fuel burning installations

A. This regulation applies to an installation operated for the purpose of producing electric or mechanical power with a resulting discharge of sulfur dioxide in the installation's effluent gases.

B. Steam power generating installations which are new sources shall not emit more than 0.80 pounds of sulfur dioxide, maximum two-hour average, per million Btu heat input when oil is fired. Steam power generating installations which are existing sources shall not emit more than 1.0 pounds of sulfur dioxide per million Btu heat input when low sulfur oil is fired.

C. Stationary rotating machinery installations which are new sources shall burn fuel which limits the emission of sulfur dioxide to 0.8 pounds per million Btu heat input when oil is fired. Stationary rotating machinery installations which are existing sources shall burn fuel which limits the emission of sulfur dioxide to 1.0 pound per million Btu heat input when low sulfur oil is fired.

D. Steam power generating and stationary rotating machinery installations which are existing sources shall not emit more than 2.2 pounds of sulfur dioxide per million Btu heat input when high sulfur oil is fired.

E. Any permit issued for the operation of an existing source, or any renewal or modification of such a permit, shall include a condition prohibiting the use of high sulfur oil by the permittee, except that if the applicant demonstrates to the satisfaction of the director: (1) that sufficient quantities of low sulfur oil are not available for use by the source, and (2) that it has adequate facilities and contingency plans to insure that the sulfur dioxide ambient air quality standards set forth in R9-3-202 will not be violated. The terms of the permit may authorize the use of high sulfur oil under such conditions as are justified. In cases where the permittee is authorized to use high sulfur oil it shall submit to the department monthly reports detailing its efforts to obtain low sulfur oil. When the conditions justifying the use of high sulfur oil no longer exist the permit shall be modified accordingly.

F. For purposes of this regulation low sulfur oil means fuel oil containing less than 0.90 percent by weight of sulfur and high sulfur oil means fuel oil containing 0.90 percent or more by weight of sulfur.

G. Steam power generating installations which are new sources shall not emit more than 0.80 pounds of sulfur dioxide per million Btu heat input when coal is fired. Steam power generating installations which are existing sources shall not emit more than 1.0 pound of sulfur dioxide per million Btu heat input when coal is fired.

Historical Note

Amended eff. Aug. 6, 1976 (Supp. 76-4).

R9-3-403. Sulfite pulp mills

No person shall cause, suffer, allow or permit discharge into the atmosphere of an amount in excess of nine pounds of sulfur oxides, calculated as sulfur dioxide, per air-dried ton of pulp produced from a sulfite pulp mill. The total emissions shall include sulfur oxides emitted from blow pits, washer vents, storage tanks and digester relief and recovery system.

Amended Reg. 3-73.

R9-3-404. Sulfuric acid plants

A. No person shall cause, suffer, allow or permit discharge into the atmosphere of more than 4.0 pounds of sulfur dioxide per ton of sulfuric acid produced (calculated as 100 percent H_2SO_4), maximum two-hour average, from facilities that produce sulfuric acid by the contact process by burning elemental sulfur, alkylation acid, hydrogen sulfide, organic sulfides and mercaptans or acid sludge.

B. No person shall cause, suffer, allow or permit discharge into the atmosphere of more than 0.15 pounds of sulfuric acid mist per ton of sulfuric acid produced (calculated as 100 percent H_2SO_4), maximum two-hour average, expressed as H_2SO_4, from facilities that produce sulfuric acid by the contact process by burning elemental sulfur, alkylation acid, hydrogen sulfide, organic sulfides and mercaptans or acid sludge.

C. This regulation shall not apply to existing sources nor to metallurgical plants or other facilities where conversion to sulfuric acid is utilized as a means of controlling emissions to the atmosphere of sulfur dioxide or other sulfur compounds.

Amended Reg. 3-73.

R9-3-405. Cement plants

No person shall cause, suffer, allow or permit discharge into the atmosphere of an amount in excess of six pounds of sulfur oxides, calculated as sulfur dioxide, per ton cement kiln feed from cement plants existing as of August 1, 1975.

Historical Note

Former R9-3-405, Other industries, renumbered R9-3-406, new Section adopted eff. Sept. 17, 1975 (Supp. 75-1).

R9-3-406. Other industries

No person shall cause, suffer, allow or permit to be discharged into the atmosphere from any other industry not covered in prior regulations of this section reduced sulfur, which includes sulfur equivalent from all sulfur emissions including but not limited to sulfur dioxide, sulfur trioxide and sulfuric acid, in excess of ten percent of the sulfur entering the process as feed.

ARTICLE 7. NITROGEN OXIDES EMISSIONS

R9-3-701. Fuel burning equipment

A. This regulation applies to an installation operated for the purpose of producing power with a resulting discharge of nitrogen oxides in the installation effluent gases.

B. Steam power generating installations which are new sources shall not emit more than 0.20 pounds of nitrogen oxides, maximum two-hour average, calculated as nitrogen dioxide, per million Btu heat input when gaseous fossil fuel is fired.

C. Steam power generating installations which are new sources shall not emit more than 0.30 pounds of nitrogen oxides, maximum two-hour average, calculated as nitrogen dioxide, per million Btu heat input when liquid fossil fuel is fired.

D. Steam power generating installations which are new sources shall not emit more than 0.70 pounds of nitrogen oxides, maximum two-hour average, calculated as nitrogen dioxide, per million Btu heat input when solid fossil fuel is fired.

Amended Reg. 3-73.

ARIZONA

ARTICLE 7

R9-3-702. Nitric acid plants

A. No person shall cause, suffer, allow or permit discharge from any new source nitric acid plant producing weak nitric acid, which is 30 to 70 percent in strength, by either the increased pressure or atmospheric pressure process, of more than 3.0 pounds of total oxides of nitrogen per ton of acid produced, maximum two-hour average, expressed as nitrogen dioxide.

B. No person shall cause, suffer, allow or permit discharge from any existing source nitric acid plant producing weak nitric acid, which is 30 to 70 percent in strength, by either the increased pressure or atmospheric pressure process, of more than 5.5 pounds of total oxides of nitrogen per ton of acid produced, maximum two-hour average, expressed as nitrogen dioxide.

Amended Reg. 3-73.

ARTICLE 1

R9-3-108. Test methods and procedures

A. Except as otherwise provided in this regulation, the testing procedures and methods set forth in Title 40, Part 60 of the Code of Federal Regulations in effect as of September 1, 1974 shall be used for purposes of determining compliance with the standards set forth in these regulations.

B. In determining compliance with any visible emission standard set forth in Article 3 Methods and Procedures presented in Appendix 6 of these Regulations shall apply.

C. Equivalent test methods and procedures may be used in lieu of those described in Paragraphs A and B of this Regulation if approved by the Director.

APPENDIX 6

METHODS AND PROCEDURES FOR DETERMINING COMPLIANCE WITH VISIBLE EMISSION STANDARDS

1. The observer shall have been certified by the Department of Health Services as qualified within the preceding six months.

2. The observer shall be positioned with a clear view of the emissions and at a horizontal distance from the emission point that is approximately equal to twice the difference between the observer's elevation and the elevation of the emission point except when the terrain or other physical characteristics prevent such an observation point. When an exception is necessary the observer shall make an appropriate entry on the reporting form which shall include a description of the observation point in relation to the emission point and supporting commentary.

3. The observer shall be positioned such that the sun is in the quadrant to the observer's back.

4. The observer's line of sight to the plume shall be approximately perpendicular to the direction of the plume's travel.

5. Readings shall be taken at the point of greatest plume density except as noted in the provisions of Paragraph 8 of this Appendix.

6. Separate readings shall be taken at fifteen (15) second intervals for a minimum of fifty (50) readings.

7. Readings shall be recorded to the nearest 5% opacity or 1/4 Ringelmann number, whichever is applicable.

8. Plumes containing water vapor shall be read at a point where the water vapor is not visible. In cases where the water vapor is visible as the plume leaves the emission point, the readings shall be made at a location downstream where the vapor is no longer visible. In cases where the water vapor becomes visible at some distance after the plume leaves the emission point, the readings may be made between the emission point and the downstream location where water vapor visibility occurs. In either case, the approximate distance along the plume from the emission point to the reading point shall be recorded by the observer with supporting commentary for the reading location.

9. Pertinent information concerning the visual background of the readings, meteorological conditions including wind speed and direction, and the time of the observations shall also be recorded.

Appendix 8 (Cont'd)

~~A8.2.3. Strong Acids~~

~~A8.2.3.1. An inventory of strong acids shall be taken daily by means of a manometer or sight glass. The inventory shall be increased by the amounts of acid shipped or otherwise transferred during that day.~~

~~A8.2.3.2. The daily inventory will be accurate to within ± 5%.~~

~~A8.2.3.3. A sample of each batch of the acid inventoried shall be taken and analyzed for sulfur in accordance with the procedures in A8.1.2.3. above.~~

~~A8.2.4. Weak Acids~~

~~A8.2.4.1. The amount of weak acid discharged from an acid plant and scrubber systems is to be determined by a time volumetric method of measurement in gallons/minute and to an accuracy of within ± 20%.~~

~~A8.2.4.2. A 500 ml sample of the weak acid shall be analyzed daily for sulfur content in accordance with the procedures in A8.1.2.3.~~

~~A8.2.5. Sulfur in Copper Production~~

~~A8.2.5.1. The weight of copper produced is to be determined by weight of copper cast to an accuracy of within ± 5%.~~

~~A8.2.5.2. The weight and number of castings shall be recorded.~~

~~A8.2.5.3. A sample of the copper is to be obtained either by the grab sample method while casting, or by the use of at least three drill holes on a representative casting from each charge.~~

~~A8.2.5.4. At least one sample must be obtained from each charge.~~

~~A8.2.5.5. Each sample is to be analyzed for sulfur content using the chemical gravimetric means of analysis to an accuracy of within ± 50%.~~

~~A8.2.6. Materials in Process~~

~~A8.2.6.1. Total tonnage of materials in process shall be determined by physical inventory on the first or last day of each month.~~

~~A8.2.6.2. A monthly change in in-process inventory shall be calculated for each material in process by taking the difference between the inventory from each material in process on the first or last day of the preceding month and multiplying that difference by the monthly composite sulfur assay for that material.~~

~~A8.2.6.3. The change in monthly in-process inventory must be accurate to within ± 50%.~~

A8.3. Sulfur Dioxide Emissions Monitoring

A8.3.1. The sulfur dioxide emissions monitoring and recording system required under R9-3-401.B.6.e. shall meet the following specifications:

A8.3.1.1. It shall be capable of continuously monitoring sulfur dioxide emissions with an accuracy of within ± 20% and a confidence level of 95%.

A8.3.1.2. Sulfur dioxide emission monitoring and recording equipment shall be operated and calibrated in accordance with manufacturer's specifications for the equipment except that calibration must be done at least once every twenty-four (24) hours.

A8.3.2. The sulfur removal equipment bypass monitoring required under R9-3-401.B.6.f. shall consist of a detector and recorder system capable of producing a permanent record of all periods in which a bypass has been operated.

A8.4. General Provisions

A8.4.1. For purposes of this Appendix, an approved equivalent process or procedure must be approved in writing by the Director prior to its use by a smelter operator.

A8.4.2. The processes and procedures specified in this Appendix shall be available for inspection, review and verification by the Department at all reasonable times.

Historical Note

Adopted eff. Dec. 22, 1976 (Supp. 76-5). Correction, Appendix 8, A8-2-1.1 (Supp. 77-2).

SECTION 4. VISIBLE EMISSIONS.

(a) No person shall cause or permit visible emissions (other than uncombined water vapor) from equipment to exceed the limitations of this Section except as specifically provided within this Code.

(1) Existing equipment — Emissions shall not exceed a density equal to or darker than No. 2 on the Standard Smoke Chart, or an opacity which obscures vision to a degree equal to or greater than smoke of No. 2 density, except that emissions of density or opacity greater than No. 2 will be allowed for not more than five minutes in the aggregate in any consecutive 60-minute period, provided such emissions will not be permitted more than three times during any 24-hour period.

(2) New equipment (incinerators and fuel burning equipment, exclusively) — Emissions shall not exceed a density equal to or darker than No. 1 on the Standard Smoke Chart, or an opacity which obscures vision to a degree equal to or greater than smoke of No. 1 density, except emissions of a density or opacity greater than No. 1, but not exceeding No. 3, will be allowed for not more than five minutes in the aggregate in any consecutive 60-minute period, provided such emissions will not be permitted more than three times during any 24-hour period.

(3) New equipment (equipment used in a manufacturing process) — Emissions shall not exceed a density equal to or darker than No. 1 on the Standard Smoke Chart or an opacity that obscures vision to a degree equal to or greater than smoke of No. 1 density.

(b) The density or opacity of an air contaminant shall be measured at the point of its emission. Except that, when the point of emission cannot be readily observed, it may be measured at an observable point in the plume nearest the point of emission.

(c) As used in this Section, the term "existing equipment" means equipment which was installed and in operation as of January 30, 1972, or equipment for which a permit has been issued pursuant to Section 3 of this Code prior to January 30, 1972, and the term "new equipment" means all equipment other than existing equipment.

(c) Upon request by the owner or person responsible for the operation of any equipment used in a manufacturing process, the Department may designate the emmissions limitations contained within Section 7. (c) (1) and 7. (c) (2) in lieu of those emmissions limitations contained within Section 4 and Section 7. (a) (1) for said equipment. Such designation shall be set forth in writing by the Department and shall thereafter be kept readily available by such owner or responsible person at the location of said equipment. Such designation may be issued upon the finding by the Department that the controls required to meet the provisions of Section 7. (a) (1) are unattainable or would be unduly restrictive. The provisions of this subsection shall not be applicable where, in the opinion of the Department, the exercise of such provisions would contribute to the failure to attain air quality consistent with that provided by the national ambient air quality standards.

(1) No person shall cause or permit the emission of an air contaminant (other than uncombined water vapor) from any equipment of a density equal to or darker than No. 1 on the Standard Smoke Chart, or of an opacity which obscures vision to a degree equal to or greater than smoke of No. 1 density.

E-4

4. Emissions of Sulfur or Nitrogen Compounds

a. Sulfur Oxide Emissions - refinery equipment and other industrial processes.

These rules limit to a specific amount (usually 2,000 ppm or less) emissions of sulfur compounds which exist as a liquid or gas at standard conditions. Emissions are calculated as sulfur dioxide.

b. Fuel Burning Equipment - Sulfur Compounds

These rules limit to a specified amount the emissions of sulfur compounds from any non-mobile fuel burning equipment. Emissions are calculated as sulfur dioxide. Typical APCD regulations require that SO_2 emissions be limited to 200 pounds per hour.

E-4

e. Fuel Burning Equipment - Nitrogen Oxides

These rules limit to a specified amount the emissions of oxides of nitrogen from any non-mobile fuel burning equipment. Emissions are calculated as nitrogen dioxide. There may be several rules which regulate nitrogen oxide emissions from specific types of equipment; for example, electric power generating equipment, and steam generating equipment. Emission limits may be based on a weight rate (e.g., 140 pounds per hour), or on concentration (e.g., 125 ppm). Emission limits may be specified for sources using gaseous, liquid, or solid fuel, or any combination thereof. All current APCD rules affecting NO_x emissions from fuel burning equipment are achieveable without the application of stack gas NO_x reduction systems.

b. Circumvention

~~These rules prohibit anyone from building, erecting, installing or using any equipment, the use of which, without resulting in a reduction in total release of air contaminants, would reduce, dilute, or conceal air contaminants which would otherwise be in violation of the Health and Safety Code or of the APCD rules and regulations.~~

c. ~~Separation - Combination of Emissions~~

~~These rules regulate the method of calculation of emissions where emissions are either separated or combined prior to emission. Where air contaminants from a single source are separated before emission, the total emission of such air contaminants is to be the product of the highest concentration at any emission point and the exhaust gas volume through all emission points, unless actual test data indicate otherwise. Where air contaminants from two or more source operations are combined prior to emission, the rules and regulations are to be applied to the combined emission as if it were a single source operation, unless there is an adequate and reliable means for separating the components of the combined emissions. In such case, the rules and regulations apply to each source operation separately.~~

d. Source Monitoring

This rule requires any source to install and operate continuous monitoring equipment when requested to do so by the APCO. The monitoring equipment shall be capable of monitoring emission levels within ± 20% with confidence levels of 95%. Persons operating or using the following equipment are required to install in-stack monitoring.

		Pollutant Monitored
i	Steam Generators (>250 million BTU/hr)	NO_x and CO_2 or O_2, and opacity
ii	Nitric Acid Plants	NO_x
iii	Sulfuric Acid Plants Sulfur Recovery Plants	SO_2
iv	Refinery Boilers, New Cokers, and Existing Boilers >10,000 bbl/day	CO

Records are to be kept for two years, during which time they are to be made available to the APCO.

e. Source Sampling

These rules require a source, which emits or may emit air contaminants for which emission limits have been established, to provide sampling ports, sampling platforms with access, and utilities for sampling equipment, if requested by the APCO.

f. Equipment Breakdown

Emissions exceeding any established limits as a result of unavoidable or unforeseeable breakdown are not deemed in violation of the APCD rule and regulations provided specified requirements are met.

COLORADO

REGULATION 1

I. SMOKE EMISSIONS AND OPACITY REGULATIONS:

Section I.A amended December 9, 1971, effective February 1, 1972.

A. Stationary Air Contamination Sources:

1. No person shall emit or cause to be emitted into the atmosphere, from any air contamination source of emission whatsoever, any air contaminant which is of such a shade or density as to obscure an observer's vision to a degree in excess of 20% opacity. Instrumentation which results in equivalent readings may be used in specific installations if approved in advance by the Air Pollution Control Division.

Subsection 2.a. amended September 4, 1975, effective December 17, 1975.

2. Exceptions:

   a. No person shall emit or cause to be emitted into the atmosphere from any alfalfa dehydration plant or process unit associated therewith, any air contaminant which is of such a shade or density so as to obscure an observer's vision to a degree in excess of 40% opacity. This emission standard for alfalfa dehydration plants shall be in effect until January 1, 1985 for all existing alfalfa dehydration plants as defined in Section II.B of Regulation No. 5; thereafter, the 20% opacity limitation provided in Section I.A of Regulation No. 1 shall apply to emissions from alfalfa dehydration plants. New alfalfa dehydration plants, as defined in Section II.C of Regulation No. 5, shall not be subject to the provisions of Regulation No. 5, but must comply with Section I.A of Regulation No. 1.

   b. No person shall emit or cause to be emitted into the atmosphere from any pilot plant and experimental operation any air contaminant for a period or periods aggregating more than three minutes in any 60 consecutive minutes which is of such a shade or density as to obscure an observer's vision to a degree in excess of 40% opacity. This emission standard for pilot plants and experimental operations shall be in effect for a period not to exceed 180 operating days, cumulative total, from the date such operations commence; thereafter, the 20% opacity limitation provided in Part I Section A of these regulations shall apply to emissions from pilot plants and experimental operations.

   d. Provisions of I.A.1 shall not apply to emissions during the building of a new fire, cleaning of fires, soot blowing, start-up, any process modification or adjustment, or occasional cleaning of control equipment, the shade or appearance of which is not darker than an equivalent opacity as to obscure an observer's view to a degree not greater than 40%, for a period or periods aggregating no more than 3 minutes in any one hour.

COLORADO

REGULATION 1

III. SULFUR DIOXIDE EMISSION REGULATIONS:

A. *Ground Level Concentrations - repealed as of March 13, 1975.*

Section B. amended February 8, 1973, effective May 1, 1973, and further amended September 4, 1975, effective December 18, 1975.

B. Source Emission Concentrations:

I. Until further provisions of this paragraph B take effect, no person shall emit or cause to be emitted sulfur dioxide emissions in excess of 500 ppm by volume from any process unit.

AMENDMENT B

III. SULFUR DIOXIDE EMISSION REGULATIONS

B. Source Emission Concentrations:

6. All new sources of sulfur dioxide emissions shall comply with emission limitations as specifically provided by this subsection B.6.

a. For purposes of this Section III.B.6. a new source is defined as a newly constructed or substantially altered source of sulfur dioxide emissions which has not been issued an Emission Permit (in accord with Regulation No. 3 of this Commission) prior to the 1977 effective date of this amended regulation.

b. The averaging time for all new source emission standards for sulfur dioxide shall be two hours, and any two-hour average of emission rates which exceeds these standards is a violation of this regulation.

d. New sources of sulfur dioxide shall not emit or cause to be emitted sulfur dioxide in excess of the following process-specific limitations:

i - All coal-fired operations, including coal-fired steam generation:

i-1) Sources converted from other fuels to coal: 1.2 lbs SO_2/million BTU of coal heat input;

i-2) Sources with a coal heat input of less than 250 million BTU per hour: 1.2 lbs SO_2/ million BTU coal heat input;

i-3) Sources with a coal heat input of 250 million BTU per hour or greater: 0.4 lbs SO_2/million BTU coal heat input.

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AMENDMENT III-B.d.

ii - All oil-fired operations, including oil-fired steam generation:

ii-1) Sources with an oil heat input of less than 250 million BTU per hour: 0.8 lbs SO_2/ million BTU of oil heat input.

ii-2) Sources with an oil heat input of 250 million BTU per hour or greater: 0.3 lbs SO_2/million BTU of oil heat input.

iii - Combustion Turbines:

iii-1) Sources with a heat input of less than 250 million BTU per hour: 0.8 lbs SO_2/million BTU:

iii-2) Sources with heat input of 250 million BTU per hour or greater: 0.35 lbs SO_2/million BTU.

iv - Natural Gas Desulfurization:

(As employed in this subparagraph B.3.d.iv., the term "delivered" means (a quantity of gas) delivered to the transmission pipeline.)

iv-1) Sources emitting less than three (3) tons per day of SO_2: 2.0 lbs SO_2/1000 cubic feet of delivered natural gas.

iv-2) Sources emitting three (3) or more tons per day of SO_2: 0.8 lbs. SO_2/1000 cubic feet of delivered natural gas.

v- Petroleum Refining:

0.3 lbs Sulfur Dioxide, for the sum of all SO_2 emissions from a given refining facility, per barrel of oil processed.

vi - Production of Oil from Shale:

vi-1) Sources producing less than 1000 barrels per day: No process emission standard.

vi-2) Sources producing 1000 or more barrels per day:

0.3 lbs. sulfur dioxide, for the sum of all sulfur dioxide emissions from a given production facility, per barrel of oil processed.

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vii - Refining of Oil Produced from Shale:

- vii-1) Sources processing less than 1000 barrels per day: No process emission standard.
- vii-2) Sources processing 1000 or more barrels per day:

  0.3 lbs. sulfur dioxide, for the sum of all sulfur dioxide emissions from a given production facility, per barrel of oil processed.

viii - Sulfuric Acid Production:

4.0 lbs. sulfur dioxide/ton of acid produced and 0.15 lbs. H_2SO_4 mist/ton of acid produced.

e. Any new source of sulfur dioxide not specifically regulated above shall:

- i - limit emissions to not more than two tons per day of sulfur dioxide OR
- ii - utilize best practical control technology as determined by the Division subject to review by the Commission.

f. A written statement of the basis and purpose of this new source emission control regulation, which includes a detailed analytical evaluation of the scientific and technical rationale justifying this regulation, has been prepared and adopted by the Commission. This written statement entitled, "Rationale for the Promulgation of a New Source Emission Control Regulation and Ambient Air Quality Standards for Sulfur Dioxide," is hereby incorporated in this regulation by reference, in accord with C.R.S. 1973, 24-4-103 as amended.

CONNECTICUT

(k) **Signature.** No permit issued under this section shall be effective until the applicant or his duly authorized representative shall have signed the permit, which signature shall constitute an agreement to abide by the terms and conditions therein.

(Effective June 1, 1972.)

Sec. 19-508-4. Source monitoring, record keeping, reporting and authorization of inspection of air pollution sources

(a) Source Monitoring. (a) (1) The owner or operator of any air pollution source shall install, use, and maintain monitoring equipment, establish and maintain records, and make periodic reports as prescribed herein by the Commissioner.

(a) (2) In addition to the requirements of subsections (b) and (c), the commissioner may require the owner or operator of any source to monitor continuously air pollutant emissions where he determines that equipment and methods for such monitoring are reasonably available. The commissioner may determine that continuous monitoring of air pollutant emissions is not technologically feasible. In such cases, the commissioner may require monitoring or intermittent stack testing of such source in whatever reasonable manner he determines to be necessary to demonstrate the source is in compliance with applicable regulations.

(a) (3) Nothing in subsections (a) (1) and (a) (2) shall be construed to require installation or use of monitoring devices or methods on any source for the purpose of determining compliance with applicable regulations when such source can be demonstrated, to the satisfaction of the commissioner, to be physically incapable of violating such regulations.

(b) Smoke and Opacity Monitoring. (b) (1) Effective January 1, 1976 the owner or operator of any of the following sources shall install, maintain, and operate a smoke and opacity monitor approved in accordance with subsection (d) (1):

(i) Fuel-burning equipment burning coal;

(ii) Fuel-burning equipment burning liquid or solid fuels having a maximum rated heat input of five million (5,000,000) BTU per hour or more;

(iii) Incinerators having a maximum rated input in excess of two thousand (2,000) pounds per hour;

(iv) A process source that will emit in excess of twenty-five (25) pounds per hour of particulate matter as determined after the application of control equipment, when operated at maximum rated capacity.

(v) Fuel-burning equipment burning no. 6 residual oil.

(b) (2) The provisions of subsection (b) (1) (i) shall not apply to:

(i) Any coal burning space heater which was installed in any single family home on or before May 1, 1975 provided only anthracite coal with a sulfur content of less than 0.75% by weight (dry basis) is used for fuel.

(ii) Any coal burning equipment in a commercial establishment in regular operation on or before May 1, 1975, provided only anthracite coal with a sulfur content of less than 0.75% by weight (dry basis) is used for fuel and that less than seventy-five (75) tons per year is consumed.

(iii) Any coal burning equipment used primarily for educational or historical demonstrations or exhibits. These sources shall include, but are not limited to, blacksmiths' forges, steam locomotives, and steamboats provided, however, that said sources do not burn fuel which contains sulfur in excess of one and one-half percent (1.5%) by weight (dry basis).

(b) (3) The provisions of subsections (b) (1) (ii) and (b) (1) (v) shall not apply to:

(i) Standby fuel burning equipment which is used only to provide emergency heat or power and which operates not more than a total of one hundred sixty-eight (168) hours in any calendar year. The commissioner may request such proof and reports of operations as he deems necessary.

(ii) Gas turbines equipped with any smoke control apparatus which, in the commissioner's judgment, is adequate to prevent visible discharge of an opacity greater than that designated as no. 1 on the ringelmann chart, or 20% opacity.

(b) (4) The owner or operator of any source listed in subsection (b) (1) who on or before September 1, 1974 has installed and continues to properly operate a smoke and opacity detector and recorder not approved by the commissioner shall not be required to install a smoke and opacity monitor approved by the commissioner until January 1, 1985. The commissioner may request such proof of date of purchase as he deems necessary.

(b) (5) The commissioner may revoke or modify an exemption under subsections (a) (3), (b) (2) (ii) and (iii), (b) (3) and (b) (4) if it is determined that repeated violations of subsection 19-508-18 (a) or violations of any specific applicable conditions in these exemptions have occurred or if it is determined that operation of the source will prevent or interfere with the attainment or maintenance of applicable ambient air quality standards, create a health hazard or create a nuisance.

(c) Record Keeping and Reporting. (c) (1) The commissioner may require the submission of any records or reports of monitoring data and other information as he deems necessary to fulfill the purpose and policies contained in these regulations. Such record keeping and reporting may be required of any point source or any indirect source of air pollution. Records and reports required by the Commissioner concerning air pollutants, fuels, and operational information shall be recorded, compiled, and submitted on forms furnished or prescribed by the Commissioner. And shall be signed or verified in writing by a ranking corporate officer or managing official with offices located in the state. Such signature shall constitute personal affirmation that such officer has exercised due diligence in verifying the accuracy of the record or report and that, to the best of his knowledge and belief. the record or report is true complete. and complies fully with applicable state requirements. Such signature shall subject the responsible official to liability for false or misleading statements.

(c) (2) Any monitoring data required of any source under subsection (a) or (b) of this section shall be kept current and in a form allowing easy inspection and shall be retained by the source for a period of three years.

(c) (3) The owner or operator of any source described in subsection (b) (1) with the exception of fuel burning equipment having a maximum gross heat input capacity of less than two hundred fifty million (250,000,000) BTUs per hour, shall submit to the commissioner on forms furnished or prescribed by him a report summarizing opacity monitoring data for the preceding three months. Such reports shall be due not later than thirty (30) days following the end of each calendar quarter.

(d) Approved Monitors. (d) (1) The commissioner shall, from time to time, publish the design, performance, and installation specifications for an approvable smoke and opacity monitor. No smoke and opacity monitor shall be considered approved until the manufacturer has submitted evidence that the monitor meets all specifications required by the commissioner and until an independent laboratory verifies that a randomly selected instrument or instruments representative of the instrument for which approval is sought, meets all specifications required by the commissioner. The commissioner reserves the right to disapprove any monitor and to revoke his previous approval if he believes that the monitor will not, in fact, meet his specifications.

(e) Operation. (e) (1) Equipment as may be required pursuant to this section shall be maintained in operation at any time that the source is in operation.

(e) (2) Except for necessary maintenance, no person shall deliberately shut down any monitoring device or method required under these regulations while the source being monitored is in operation or is emitting air pollutants.

(e) (3) In the case of deliberate shut down or of a breakdown or failure of any monitoring device or method during which time the source will be in operation, all reasonable measures shall be taken to assure resumption of monitoring as soon as possible. In the event such shut down of monitoring equipment is expected, or may reasonably be expected, to continue for longer than 72 hours, and if the source is to be operated at any time during that period, the Commissioner shall be promptly notified in writing. Such notification shall specify the steps being taken to restore monitoring, the expected duration of the monitoring shut down, and the length of time that the source will be in operation during the shut down.

(e) (4) Failure of any monitoring equipment in no way relieves the owner or operator of any source from the responsibility to comply with applicable air pollutant emission regulations or standards.

(e) (5) It shall be a violation of these regulations to adjust or alter any monitoring device or method so as to falsify its readings or results.

(f) Source Inspection. (f) (1) The Commissioner or his designated agent, upon presentation of his credentials may:

(i) Enter at all reasonable times upon any public or private property, except a private residence, for the purpose of inspection and investigation to ascertain possible violations of these regulations, in accordance with constitutional limitations;

(ii) At reasonable times have access to records and may obtain copies thereof; and

(iii) At any reasonable time inspect any monitoring equipment or method and sample any emissions.

Sec. 19-508-5. Methods for sampling, emission testing, and reporting

(a) All sampling, emission testing, and reporting shall be done in accordance with procedures prescribed by the Commissioner from time to time by regulation.

(b) Sampling and emission testing methods. (1) Analysis for the sulfur content of liquid fuels shall be done according to the most current American Society for Testing and Materials methods D129 or D 1552.

(2) Analysis for sulfur content of solid fuel shall be done according to the most current American Society for Testing and Materials methods:

(i) Mechanical sampling by method D 2234.

(ii) Sample preparation by method D 2013.

(iii) Sample analysis by method D 3176 or D 3180.

(3) The emission testing method for sulfur dioxide emissions from stationary sources shall be that specified as Method 6 in title 40 code of federal regulations part 60.

(4) The emission testing method for sulfur oxides emissions from sulfuric acid plants, and from any other source as the Commissioner shall determine by regulation, shall be that specified as Method 8 in title 40 code of federal regulations part 60.

(5) The emission testing method for particulate emissions from all stationary sources shall be that specified as Method 5 in title 40 code of federal regulations part 60.

(6) Emission tests for organic compound emissions shall be conducted in a manner approved by the commissioner.

(7) The emission testing method for nitrogen oxide emissions from stationary sources shall be that specified as Method 7 in title 40 code of federal regulations part 60.

(c) All emissions tests undertaken to comply with this section shall be made under the direction of persons qualified by training or experience in the field of sampling emissions from air pollution sources.

(d) Sampling and emission testing methods as specified in subsection (b) may be modified or adjusted with the approval of the Commissioner as required by the specific sampling conditions or needs and in accordance with good engineering practice, judgment and experience.

(e) (1) The owner or operater of a source of air pollution which would emit 100 tons per year or more of air pollutants if operated without the use of air pollution control equipment shall be required to carry out emission tests as prescribed by the commissioner. Such test or tests shall be conducted at such intervals as the commissioner may specify for an individual source. As used in this subsection "air pollution control equipment" includes but is not limited to: baghouses; cyclone type seperators; electrostatic precipetators; fume incinerators; scrubbers and combinations thereof.

(e) (2) In addition to the emission tests required in subsection (e)(1) the commissioner may require the owner or operator of any air pollution source to conduct emission tests of emissions. Tests required under the provisions of subsection (e)(1) and this subsection shall be conducted in a manner satisfactory to the Commissioner and shall be conducted at the expense of the owner or operator of the pollution source being tested, and the commissioner or his representative shall be entitled to observe the tests, including initial sampling, subsequent laboratory analysis, and other related procedures.

Sec. 19-508-6. Air pollution emergency episode procedures

(a) When a stagnation advisory has been received from the National Weather Service by the Commissioner, he shall prepare for the establishment of an appropriate emergency stage.

(b) Emergency criteria. In determining any stage of an air pollution emergency to exist, the Commissioner shall be guided by the following criteria:

(b) (1) 1st Stage: Advisory of Threatening Atmospheric Conditions. A first-stage emergency ("Advisory of Threatening [illegible] Conditions.") shall be declared

(iii) Except for fire training exercises, burning shall only be permitted on sunny or partly sunny days when wind speed is 5 to 15 miles per hour;

(iv) A copy of the certificate shall be kept in the possession of the applicant at the burning site at all times during the burning;

(v) The commissioner or his designee or the open burning official may revoke in writing any certificate or add any reasonable, specifically identified conditions if circumstances indicate that air pollution standards will be violated.

(f) **Effect on local ordinances.** These regulations do not preclude a municipality from prohibiting or attaching any more stringent conditions to any open burning.

(g) **Certified open burning officials.** The commissioner may establish and maintain a program for the training of local open burning officials. A local open burning official shall be nominated only by the chief executive officer of the municipality in which the official will serve. Nomination of the local open burning official entitles him to participate in the training program. The commissioner may certify as local open burning official any person properly nominated who successfully completes the training program. Between training programs and upon approval by the commissioner, a nominated official may serve in a temporary capacity. The nomination may be revoked by the chief executive of the municipality in which the local open burning official serves according to local practice, procedure, custom or ordinance.

(Effective January 7, 1976)

Sec. 19-508-18. Control of particulate emissions

(a) **Visible emissions.** (a) (1) Visible emission restrictions for stationary sources.

(i) No person shall cause or permit the emission of visible air pollutants of a shade or density equal to or darker than that designated as No. 1 on the Ringelmann chart or 20 percent opacity.

(ii) A person may discharge air pollutants into the atmosphere from any source of emission for a period or periods aggregating not more than 5 minutes in any 60 minutes, provided that said air pollutants are of a shade or density not darker than No. 2 on the Ringelmann chart or 40 percent opacity.

(iii) Open burning conducted under provisions of section 19-508-17 shall not be subject to this subsection.

(a) (2) Visible emission restrictions for mobile sources.

(i) No person shall cause or permit the emission of visible air pollutants from gasoline-powered mobile sources for longer than five (5) consecutive seconds.

(ii) No person shall cause or permit the emission of clearly visible air pollutants (comparable to a shade or density equal to or darker than No. 1 on the Ringelmann chart or 20 percent opacity) from diesel powered motor vehicles for more than ten (10) consecutive seconds, during which time the maximum shade or density of emissions shall be no darker than No. 2 on the Ringelmann chart or 40 percent opacity.

(a) (3) Exceptions for uncombined water. Where the presence of uncombined water, such as water vapor, is the only reason for the failure of an emission to meet the requirements of this regulation, then the provisions of this regulation shall not apply.

(a) (4) The following shall be exempt from the requirements of subsection (a) (2):

(i) Antique automobiles over 30 years old;

(ii) Vehicles used exclusively for racing; and

(iii) Mobile sources in the process of being repaired.

(a) (5) Emissions from stationary or idling mobile sources. No mobile source engine shall be allowed to operate for more than three (3) consecutive minutes when the mobile source is not in motion except as follows:

(i) When a mobile source is forced to remain motionless because of traffic conditions or mechanical difficulties over which the operator has no control;

(ii) When it is necessary to operate heating, cooling or auxiliary equipment installed on the mobile source when such equipment is necessary to accomplish the intended use of the mobile source;

(iii) To bring the mobile source to the manufacturer's recommended operating temperature;

(iv) When the outdoor temperature is below twenty (20) degrees Fahrenheit;

(v) When the mobile source is being repaired.

(a) (6) Subsections (a) (2) and (a) (5) shall not apply to aircraft, locomotives operating on rails, vessels for transportation on water, lawnmowers, snowblowers, and other small home appliances.

(b) **Fugitive dust.** (b) (1) No person shall cause or permit any materials to be handled, transported, or stored; or a building, its appurtenances, or a road to be used, constructed, altered, repaired or demolished without taking reasonable precautions to prevent particulate matter from becoming airborne. Such reasonable precautions shall be in accordance with good industrial practice as determined by the Commissioner and shall include, but not be limited to, the following:

(i) Use, where possible, of water or chemicals for control of dust in the demolition of existing buildings or structures, construction operations, the grading of roads or the clearing of land;

(ii) Application of asphalt, oil, water, suitable chemicals or coverage on materials stockpiles and other surfaces which can give rise to airborne dusts;

(iii) Installation and use of hoods, fans, and fabric filters to enclose and vent the handling of dusty materials.

(b) (4) No particulate matter shall be emitted into the open air in such a matter as to cause a nuisance.

(c) **Incineration.** (c) (1) Definitions. The following terms as used in subsections (c) (1) to (c) (6) inclusive shall have the following meanings:

(i) "Incinerator" means any device, apparatus, equipment or structure used for destroying, reducing or salvaging by fire any material or substance, including but not limited to, refuse, rubbish, garbage, trade waste, debris or scrap, or facilities for cremating human or animal remains. "Small incinerator" means an incinerator designed and used to burn waste materials of types 0, 1, 2, and 3 only, in all capacities not exceeding two thousand pounds per hour of waste material input. "Special incinerator" means an incinerator designed and used to burn pathological waste type 4 or trade waste types 5 and 6 of any burning capacity. Crematories are included in this category. "Large incinerator" means an incinerator owned or operated by any government or any person, firm or corporation, designed and used to burn waste materials generated by the public of any and all types, 0 to 6 inclusive, with a burning capacity in excess of two thousand pounds per hour of waste material input.

(ii) "New incinerator" means an incinerator which is a new source, as defined in section 19-508-1 (r).

(iii) "Existing incinerator" means any incinerator which is not a new source, as defined in section 19-508-1 (r).

(iv) "Flue-fed incinerator" means an incinerator provided with a single flue which serves as both the charging chute and the flue to transport products of combustion to the atmosphere.

(v) "Liquid particulates" means particles which have volume but are not of rigid shape and which upon collection tend to coalesce and create uniform, homogeneous films upon the surface of the collecting media.

(vi) "Solid particulates" means particles of rigid shape and definite volume.

(vii) "Smoke" means and includes small gas-borne particles, excluding water vapor, arising from a process of combustion in sufficient number to be observable.

(viii) "Air pollution control equipment" means any device which prevents or controls the emission of any air contaminant.

(ix) "Type 0 waste" means trash, a mixture of highly combustible waste such as paper, cardboard, cartons, wood boxes and combustible floor sweepings, from commercial and industrial activities. The mixture may contain up to ten percent by weight of plastic bags, coated paper, laminated paper, treated corrugated cardboard, oily rags and plastic or rubber scraps. This type of waste contains approximately ten percent moisture and five percent incombustible solids and has a heating value of approximately eighty-five hundred BTUs per pound as fired.

(x) "Type 1 waste" means rubbish, a mixture of combustible waste such as paper, cardboard cartons, wood scrap, foliage and combustible floor sweepings from domestic, commercial and industrial activities. The mixture may contain up to twenty percent by weight of restaurant or cafeteria waste, but contains little or no treated paper, plastic or rubber wastes. This type of waste contains approximately twenty-five percent moisture and ten percent incombustible solids and has a heating value of approximately sixty-five hundred BTU per pound as fired.

(xi) "Type 2 waste" means refuse, consisting of an approximately even mixture of rubbish and garbage by weight. This type of waste is common to apartment and residential occupancy, consisting of up to fifty percent moisture and approximately seven percent incombustible solids, and has a heating value of approximately forty-three hundred BTU per pound as fired.

(xii) "Type 3 waste" means garbage, consisting of animal and vegetable wastes from restaurants, cafeterias, hotels, hospitals, markets and like installations. This type of waste contains up to seventy percent moisture and up to five percent incombustible solids and has a heating value of approximately twenty-five hundred BTU per pound as fired.

(xiii) "Type 4 waste" means human and animal remains, consisting of carcasses, organs and solid organic wastes from hospitals, laboratories, abattoirs, animal pounds and similar sources, consisting of up to eighty-five percent moisture and approximately five percent incombustible solids and having a heating value of approximately one thousand BTU per pound as fired.

(xiv) "Type 5 waste" means by-product waste, gaseous, liquid or semi-liquid, such as tar, paints, solvents, sludge, fumes from industrial operations.

(xv) "Type 6 waste" means solid by-product waste, such as rubber, plastics, wood waste from industrial operations and all salvage operations.

(c) (2) *Flue-fed incinerators.* No person shall construct, install, use or cause to be used any new incinerator of the flue-fed type.

(c) (3) (i) **Emission standards. Particulates.** No person shall construct, install, use or cause to be used any new incinerator which will result in particulate matter in the effluent in excess of 0.08 gr/S.C.F. (0.18 gm/NM^3) corrected to 12 percent CO_2, maximum 2-hour average. No person shall use or cause to be used any existing incinerator which will emit more than four-tenths pound of particulates per one thousand pounds of flue gases adjusted to fifty percent excess air.

(c) (3) (ii) All incinerators must comply with subsection (a) (1).

(c) (3) (iii) Unburned waste and ash. No person shall cause, suffer, allow or permit the emission of particulates of unburned waste or ash from any incinerator which are individually large enough to be discernible by the human eye.

(c) (3) (iv) Odors. No person shall construct, install, use or cause to be used any incinerator which will result in violations of section 19-508-23.

(c) (4) Operation. (i) Approved operating procedures and rated burning capacity of the incinerator shall be posted at a convenient place as near as practical to the point of operation.

(ii) No person shall use or cause to be used any incinerator unless all components connected, or attached to, or serving the incinerator which affect air pollution are functioning properly and are in use, in accordance with the permit to construct and the certificate or permit to operate.

(c) (5) (i) Emission tests shall be conducted at the maximum-rated burning capacity of the incinerator.

(c) (5) (ii) The burning capacity of an incinerator shall be the manufacturer's or designer's guaranteed maximum rate or such other rate as may be determined by the Commissioner in accordance with good engineering practices. In cases of conflict, the determination made by the Commissioner shall govern.

(c) (5) (iii) For the purposes of this regulation, the total of the capacities of all furnaces within one system shall be considered as the incinerator capacity.

(c) (6) Exceptions. The provisions of subsections (c) (1) to (c) (5) inclusive shall not apply to incinerators installed or used in dwellings containing six or fewer family units.

(c) (7) None of these regulations shall be construed to permit the emission of hazardous materials defined and limited by the Commissioner.

(d) **Fuel-burning equipment.** (d) (1) No person shall cause or permit the emission from fuel-burning equipment of particulate matter in excess of 0.20 pounds per million BTU (0.36 gm/10^6 gm-cal) of heat input for existing sources and 0.10 pounds per million BTU (0.18 gm/10^6 gm-cal) of heat input for new sources.

(d) (2) For purposes of this section, the heat input value used shall be the equipment manufacturer's or designer's guaranteed maximum input, whichever is greater.

(d) (3) Fuel-burning sources which, as of the effective date of these regulations, have particulate control equipment in place must maintain such control equipment in proper operation.

(e) **Process industries — general.** (e) (1) No person shall cause or permit the emission of particulate matter in any one hour from any source in excess of the amount shown in Table 3-1 below for the process weight rate allocated to such source, with the exception of sources specified in subsection (f).

TABLE 3-1

Process Weight Rate lbs./hr.	Emission Rate lbs./hr.	Process Weight Rate lbs./hr.	Emission Rate lbs./hr.
50	0.36	60,000	29.60
100	0.55	80,000	31.19
500	1.53	120,000	33.28
1,000	2.25	160,000	34.85
5,000	6.34	200,000	36.11
10,000	9.73	400,000	40.35
20,000	14.99	1,000,000	46.72

(e) (2) Interpolation of the data in Table 3-1 for the process weight rates up to 60,000 lbs./hr. shall be accomplished by the use of the equation:

$E = 3.59\ P^{0.62}$ P equal to or less than 30 tons/hr.

and interpolation and extrapolation of the data for process weight rates in excess of 60,000 lbs/hr. shall be accomplished by the use of the equation:

$E = 17.31\ P^{0.16}$ P greater than 30 tons/hr.

Where: E = Emissions in pounds per hour.
P = Process weight rate in tons per hour.

(e) (3) For the purposes of this regulation, process weight per hour is the total weight of all materials introduced into any specific process that may cause any emission of particulate matter. Solid fuels charged will be considered as part of the process weight, but liquid and gaseous fuels and combustion air will not. For a cyclical or batch operation, the process weight per hour will be derived by dividing the total process weight by the number of hours in one complete operation from the beginning of any given process to the completion thereof, excluding any time during which the equipment is idle. For a continuous operation, the process weight per hour will be derived by dividing the process weight for a typical period of time by the length of that period of time.

(e) (4) Where the nature of any process or operation or the design of any equipment is such as to permit more than one interpretation of this regulation, the interpretation that results in the minimum value for allowable emission shall apply.

(e) (5) For purposes of the regulation, the total process weight from all similar process units at a plant or premises shall be used for determining the maximum allowable emission of particulate matter that passes through a stack or stacks.

(e) (6) For the purposes of this regulation, when any material undergoes a series of operations which are capable of emitting particulate matter and which employ any combination of machines, equipment, or other devices used for processing the material either continuously or in batches, the total process weight for the series of operations shall be the weight of materials introduced to the series as a whole.

Any material which is the product of any operation in the series shall not be counted as part of the process weight for any other operation in the series.

(f) Process industries — specific. (f) (1) Emission standards (iron cupolas). No person shall cause or allow the operation of any iron foundry cupola unless such cupola is equipped with gas-cleaning devices and so operated as to remove eighty-five percent by weight of all particulate matter in the cupola discharge gases, or to release not more than eight-tenths of a pound of particulate matter per thousand pounds of discharge gas, whichever is more stringent. Gases, vapors and gas-entrained effluents from such cupolas shall be incinerated at a minimum temperature of 1300 degrees Fahrenheit for a period of not less than three-tenths of a second.

(f) (2) Emission standards (hot mix asphalt plants). No person shall cause or allow the emission of particulate matter from hot mix asphalt plants in excess of three-tenths of a pound per one thousand pounds of discharge gas. In addition, the process must conform to subsection (b) of this regulation.

(f) (3) Emission standards (foundry sand). No person shall cause or allow the operation of a foundry sand process unless such process conforms to subsection (b) of this regulation and is equipped with fugitive dust control facilities with collection efficiency of at least 90 percent.

(f) (4) Emission standards (concrete batching). No person shall cause or allow the operation of a concrete batching process unless such process conforms to subsection (b) of this regulation and is equipped with fugitive dust control facilities with a collection efficiency of 90 percent or 0.02 pounds per cubic yard of concrete, whichever results in less emission.

(Effective June 1, 1972)

Sec. 19-508-19. Control of sulfur compound emissions

(a) **Fuel combustion.** (a) (1) Definitions. As used in subsections (a) through (f) inclusive: (i) "Fuel" means a substance containing combustibles used for producing heat, light, power, or energy; (ii) "combustible" means the heat-producing constituents of a fuel; (iii) "combustion" means the rapid chemical combination of oxygen with the combustible element of a fuel resulting in the production of heat; (iv) "sulfur dioxide (SO_2)" means a colorless gas at standard conditions which has the molecular formula SO_2; (v) "sulfur oxides (SO_x)" means any compound made up only of sulfur and oxygen. For the purpose of this regulation, concentrations of sulfur oxides (SO_x) will be calculated as sulfur dioxide (So_2); (vi) "stack" or "chimney" means a flue, conduit or opening permitting particulate or gaseous emission into the open air, or constructed or arranged for such purpose; (vii) "fuel merchant" means any person who offers for sale or sells, transfers, or provides in retail or wholesale trade, fuel, including agents, brokers, wholesalers, distributors, or producers who sell commercial or noncommercial fuel; (viii) "fuel user" means any person who stores or utilizes commercial or noncommercial fuel for the purpose of creating by combustion heat, light, power, or energy.

(a) (2) (i) No fuel merchant, except as provided in subsections (a) (3) and (a) (4), shall store, offer for sale, sell, make available, deliver for use or exchange in trade for use in Connecticut, and no person shall use or burn fuel which contains sulfur in excess of one percent (1.0%) by weight (Dry Basis). After September 1, 1972, no fuel merchant shall store, offer for sale, sell, make available, deliver for use or exchange in trade for use in Connecticut fuel which contains sulfur in excess of one-half of one percent (0.5%) by weight (Dry Basis), and after April 1, 1973, no person shall use or burn fuel which contains sulfur in excess of one-half of one percent (0.5%) by weight (Dry Basis).

(ii) Under conditions of fuel shortage emergency, as determined by the Commissioner, higher percentages of sulfur may be permitted by express approval of the Commissioner for temporary periods.

(a) (3) Notwithstanding the provisions of subsection (a) (2), the Commissioner may approve: (i) combustion of a mixture of fuels, or (ii) combustion of a single fuel, which contain(s) a higher sulfur content than that specified by subsection (a) (2), if the combustion of such fuel is combined with a stack-gas cleaning process or its equivalent as approved in writing by the Commissioner. No such stack-gas cleaning process, or its equivalent, shall be approved unless the total sulfur compound emissions (expressed as sulfur dioxide) from the stack, chimney, flue, and other vents to the ambient air do not exceed 0.55 pounds per million BTU gross heat input, provided that any effluent from the approved stack-gas cleaning process or its equivalent which is discharged into state waters meets with the prior approval of the Commissioner. The Commissioner may require such information or data as is necessary to establish that total emissions will not exceed the above limitations.

(a) (4) In other than conditions of fuel shortage emergency described under subsection (a) (2) (ii), fuel merchants seeking to store, offer for sale, sell, deliver for use or exchange in trade, for use in Connecticut, and fuel users seeking to create by combustion heat, light, power, or energy from fuels containing sulfur in excess of the maximums set by subsection (a) (2) under the conditions specified in subsection (a) (3) shall obtain the prior approval of the Commissioner.

(a) (5) The provisions of subsection (a) (1) through (a) (7) inclusive shall not apply to fuels used by ocean-going vessels.

(a) (6) The Commissioner may require submission of fuel analyses or results of stack sampling, or both, prepared at the expense of the merchant or user, to ensure compliance with the provisions of subsections (a) (1) through (a) (7) inclusive, and no person shall fail to submit such data when requested to do so by the Commissioner.

(a) (7) Persons selling fuels in Connecticut shall maintain records of sales of all fuel containing sulfur and shall make these records available for inspection by the Commissioner or his representative during normal business hours. This section shall not apply to any of the following fuels which have sulfur contents below two-tenths of one percent (0.2%) by weight (Dry Basis): distillate oil, motor vehicle fuel, aircraft fuel, or gaseous fuel.

(a) (8) No person shall cause or permit the flaring or combustion of any refinery process gas stream or any other process gas stream that contains sulfur compounds measured as hydrogen sulfide in concentrations greater than 10 grains per 100 standard cubic feet (23 gm/100 scm) of gas.

(a) (9) (i) The provisions of subsections (a) (2) (i) above shall not apply to any coal burning space heater installed in any single family home on or before May 1, 1975. This exemption shall apply only to heaters burning anthracite coal with a sulfur content less than 0.75% by weight (dry basis).

(ii) The provisions of subsections (a) (2) (i) above shall not apply to any commercial establishment's coal burning equipment in operation on or before May 1, 1975. This exemption shall be limited to the burning of less than 75 tons per year of anthracite coal with a sulfur content less than 0.75% by weight (dry basis).

(iii) The provisions of subsections (a) (2) (i) above shall not apply to any coal burning equipment used primarily for educational or historical demonstrations or exhibits. These sources shall include, but are not limited to, blacksmith's forges, steam locomotives, and steamboats, provided, however, that such sources do not use or burn fuel which contains sulfur in excess of one and one-half percent (1.5%) by weight (dry basis).

(iv) As a prerequisite for exemption under the provisions of subsections (a) (9) (ii) and (a) (9) (iii), owners shall notify the commissioner on or before October 15, 1976 of said operation in accordance with instructions and forms furnished by the commissioner.

(v) The commissioner may revoke or modify an exemption under subsection (a) (9) if he determines that operation of the source will (1) prevent or interfere with the attainment or maintenance of any applicable air quality air standards, or (2) create a substantial health problem.

(vi) All fuel merchants are authorized to sell fuel to any owner or operator granted an exemption pursuant to subsections (a) (9) (i), (ii), and (iii) above. In addition to the requirements of subsection (a) (7) above, all records shall include the sulfur content of the fuel.

(b) **Sulfuric acid plants.** No person shall cause or permit sulfur oxides emissions which exceed 6.5 pounds per ton (3.25 kg/metric ton) of 100 percent acid produced.

(c) **Sulfur recovery plants.** No person shall cause or permit the emission of sulfur oxides from a sulfur recovery plant to exceed 0.01 pounds (kg.) per pound (kg.) of sulfur processed.

(d) **Nonferrous smelters.** No person shall cause or permit the emission of sulfur oxides from primary nonferrous smelters to exceed that set forth according to the following equations.

Copper smelters: $Y = 0.2\ X.$
Zinc smelters: $Y = 0.564\ X^{0.86}$
Lead smelters: $Y = 0.98\ X^{0.77}$

Where X is the total sulfur fed to the smelter in lb./hr. and Y is the allowable sulfur dioxide emissions in lb./hr.

(e) **Sulfite pulp mills.** No person shall cause or permit the total sulfite pulp mill emissions of sulfur oxides from blow pits, washer vents, storage tanks, digester relief, recovery system, etc., to exceed 9.0 pounds per air-dried ton (4.5 kg./metric ton) of pulp produced.

(f) **Other process sources.** Notwithstanding the provisions of section 19-508-18 (e), process sources not covered in subsections (b) through (e) inclusive shall not emit sulfur oxides in the effluent in concentrations which exceed 500 parts per million.

(Effective November 14, 1975)

Sec. 19-508-20. Control of organic compound emissions

(a) Storage of volatile organic compounds. (a) (1) No person shall place, store, or hold in any stationary tank, reservoir or other container of more than 40,000 gallons (150,000 liters) capacity any volatile organic compounds unless such tank, reservoir, or other container is a pressure tank capable of maintaining working pressures sufficient at all times to prevent vapor or gas loss to the atmosphere or is designed, and equipped, with one of the following vapor loss control devices:

(i) A floating roof, consisting of a pontoon type, double deck type roof or internal floating cover, which will rest on the surface of the liquid contents and be equipped with a closure seal or seals to close the space between the roof edge and tank wall. This control equipment shall not be permitted if the volatile organic compounds have a vapor pressure of 11.0 pounds per square inch absolute (568 mm. Hg.) or greater under actual storage conditions. All tank gauging or sampling devices shall be gas-tight except when tank gauging or sampling is taking place.

is incinerated in a direct flame afterburner, boiler, or equivalent device at a temperature of 1300°F for a period of not less than three-tenths of a second.

(Effective June 1, 1972)

Sec. 19-508-22. Control of nitrogen oxides emissions

(a) **Fuel burning equipment.** (a) (1) No person shall cause or permit the emission of nitrogen oxides, calculated as nitrogen dioxide, from gas-fired fuel burning equipment is excess of 0.2 pounds per million BTU (0.36 gm/10^6 gm-cal) of heat input.

(a) (2) No person shall cause or permit the emissions of nitrogen oxides, calculated as nitrogen dioxide, from oil-fired fuel burning equipment in excess of 0.30 pounds per million BTU (0.54 gm/10^6 gm-cal) of heat input.

(a) (3) No person shall cause or permit emissions of nitrogen oxides, calculated as nitrogen dioxide, from a coal-fired boiler in excess of 0.7 pounds per million BTU of heat input per hour for new sources and 0.9 pounds per million BTU for existing sources.

(a) (4) Subsections (a) (1) through (a) (3) inclusive shall apply to all equipment with a maximum capacity rating above 250 million BTU per hour. For equipment rated between 5 and 250 million BTU/hr., these regulations shall apply unless the Commissioner is satisfied that it is not technically or economically feasible for a unit of the size considered. Subsections (a) (1) through (a) (4) inclusive shall not apply to stationary gas turbines, stationary internal combustion engines and mobile sources.

(a) (5) No person shall cause or permit emissions of nitrogen oxides, calculated as nitrogen dioxide, from a stationary gas turbine in excess of 0.9 pounds per million BTU of heat input.

(b) **Nitric acid manufacture.** No person shall cause or permit the emission of nitrogen oxides, calculated as nitrogen dioxide, from nitric acid manufacturing plants in excess of 5.5 pounds per ton (2.8 kg./metric ton) of 100 percent acid produced.

(c) **Other sources.** No non-fuel burning source shall emit nitrogen oxides, calculated as nitrogen dioxide, in excess of 700 parts per million by volume.

(Effective June 1, 1972)

Sec. 19-508-23. Control of odors

(a) No person, firm or corporation shall emit or cause to be emitted into the outdoor air any substance which creates an objectionable odor beyond his property line. An odor will be deemed objectionable when:

(1) A staff member of the Department of Environmental Protection determines, following personal observation, that the odor is objectionable taking into account its nature, concentration, location, and duration; or,

Section 2 - Restrictions on Sulfuric Acid Manufacturing Operations

2.1 No person shall cause or allow the emission of sulfur dioxide in the tail gases from any existing sulfuric acid manufacturing operation to exceed either a concentration of 1,000 parts per million by volume or a mass emission rate as specified in Table 1.

TABLE 1

ALLOWABLE MASS EMISSION RATE OF SULFUR DIOXIDE FROM EXISTING SULFURIC ACID MANUFACTURING OPERATIONS

Production Rate (Tons Per Day)	Mass Emission Rate (Pounds Per Hour)
100	75
300	210
500	345
700	480
900	615
1100	750
1300	885
1500	1020

2.2 No person shall cause or allow the emission of sulfur dioxide in the tail gases from new sulfuric acid manufacturing operations to exceed either a concentration of 500 parts per million by volume or a mass emission rate as specified in Table 2.

TABLE 2

ALLOWABLE MASS EMISSION RATE OF SULFUR DIOXIDE FROM NEW SULFURIC ACID MANUFACTURING OPERATIONS

Production Rate (Tons Per Day)	Mass Emission Rate (Pounds Per Hour)
100	38
300	106
500	173
700	240
900	308
1100	375
1300	443
1500	510

Section 3 - Restriction on Sulfur Recovery Operations

3.1 No person shall cause or allow the emission of sulfur dioxide in the tail gases from existing sulfur recovery operations to exceed either a concentration of 2,000 parts per million by volume or a mass emission rate as specified in Table 3.

TABLE 3

ALLOWABLE MASS EMISSION RATE OF SULFUR DIOXIDE FROM SULFUR RECOVERY OPERATONS

Production Rate (Tons Per Day)	Mass Emission Rate (Pounds Per Hour)
50	425
100	550
200	800
300	1050
400	1300
500	1550
600	1800
700	2050
800	2300
900	2550
1000	2880

3.2 No person shall cause or allow the emission of sulfur dioxide in the tail gases from new sulfur recovery operations to exceed either a concentration of 2,000 parts per million by volume or a mass emission rate as specified in Table 3.

DELAWARE

REGULATION XII

Section 1 - General Provisions

1.1 The provisions of this Regulation shall not apply where the heat input to the equipment is less than 500 million BTU per hour.

1.2 The provisions of this Regulation shall not apply to fuel burning equipment when the heat produced in such equipment is used for some purpose other than the production of steam.

1.3 The provisions of this Regulation shall not apply to the start-up and shutdown of equipment which operates continuously or in an extended steady state when emissions from such equipment during start-up and shutdown are governed by an operation permit issued pursuant to the provisions of Section 3, Regulation No. II.

Section 2 - Emission Limits in New Castle County

2.1 After July 1, 1979 no person shall cause or allow the emissions of nitrogen oxides from fuel burning equipment in New Castle County in excess of the following limits:

a. From fuel burning equipment fired with gas: 0.2 pounds per million BTU of heat input.
b. From fuel burning equipment fired with oil: 0.3 pounds per million BTU of heat input.
c. From fuel burning equipment fired with coal: 0.7 pounds per million BTU of heat input.
d. When different fuels are burned simultaneously in any combination the applicable standard shall be determined by proration using the following formula:

$$\frac{X(0.20) + Y(0.30) + Z(0.70)}{X+Y+Z}$$

Where:
X is the percent of total heat input derived from gaseous fuel and
Y is the percent of total heat input derived from liquid fuel and
Z is the percent of total heat input derived from solid fuel.

2.2 Emissions of nitrogen oxides shall be calculated as nitrogen dioxide for the purposes of this Regulation.

2.3 When different fossil fuels are burned simultaneously in any combination, the applicable standard shall be determined by proration based on percent of total heat input derived from each fuel.

REGULATION XIV

Section 2 - Requirements

2.1 No person shall cause or allow the emission of visible air contaminants and/or smoke from a stationary source, the shade or appearance of which is greater than either a Number 1 of the Ringelmann Smoke Chart or twenty (20%) percent opacity for an aggregate of more than three (3) minutes in any one (1) hour or more than fifteen (15) minutes in any twenty-four (24) hour period.

REGULATION NO. XX

NEW SOURCE PERFORMANCE STANDARDS

Section 1 - General Provisions

1.1 Applicability

(a) The provisions of this regulation apply to any person responsible for any stationary source specified herein, the construction, reconstruction or modification of which was commenced after August 17, 1971.

1.2 Notification and Record Keeping

(a) Any person subject to the provisions of this regulation shall furnish the Secretary written notification as follows:
   (1) A notification of the anticipated date of initial startup of an applicable source not more than 60 days or less than 30 days prior to such date.
   (2) A notification of the actual date of initial startup of an applicable source within 15 days after such date.
   (3) A notification of the date construction or reconstruction of an applicable source is commenced postmarked no later than 30 days after such date. This requirement shall not apply in the case of mass-produced facilities which are purchased in completed form.
   (4) A notification of any physical or operational change to an existing facility which may increase the emission rate of any air pollutant to which a standard applies, unless that change is specifically exempted under an applicable subsection. This notice shall be postmarked 60 days or as soon as practicable before the change is commenced and shall include information describing the precise nature of the change, present and proposed emission control systems, productive capacity of the facility before and after the change, and the expected completion date of the change. The Secretary may request additional relevant information subsequent to this notice.
   (5) A notification of the date upon which demonstration of the continuous monitoring system performance commences. Notification shall be postmarked not less than 30 days prior to such date.

(b) Any owner or operator subject to the provisions of this section shall maintain records of the occurrence and duration of any startup, shutdown, or malfunction in the operation of an applicable source; any malfunction of the air pollution control equipment; or any periods during which a continuous monitoring system or monitoring device is inoperative.

(c) Each owner or operator required to install a continuous monitoring system shall submit a written report of excess emissions (as defined in applicable subsections) to the Secretary for every calendar quarter. All quarterly reports shall be postmarked by the 30th day following the end of each calendar quarter and shall include the following information:
   (1) The magnitude of excess emissions, any conversion factor(s) used, and the date and time of commencement and completion of each time period of excess emissions.
   (2) Specific identification of each period of excess emissions that occurs during startups, shutdowns, and malfunctions of the applicable source. The nature and cause of any malfunction (if known), the corrective action taken or preventative measures adopted.

(d) Any owner or operator subject to the provisions of this section shall maintain a file of all measurements, including continuous monitoring system, monitoring device, and performance testing measurements; all continuous monitoring system performance evaluations; all continuous monitoring system or monitoring device calibration checks; adjustments and maintenance performed on these systems or devices; and all other information required by this section recorded in a permanent form suitable for inspection. The file shall be retained for at least two years following the date of such measurements, maintenance, reports, and records.

1.3 Monitoring Requirements

(a) Unless otherwise approved by the Secretary or specified in applicable subsections, the requirements of this section shall apply to all continuous monitoring systems required under applicable subsections.

(b) All continuous monitoring systems and monitoring devices shall be installed and operational prior to conducting performance tests under Section 1.4. Verification of operational status shall, as minimum, consist of the following:

(1) Completion of the conditioning period specified by applicable requirements.

(2) For monitoring devices referenced in applicable subsections, completion of the manufacturer's written requirements or recommendations for checking the operation or calibration of the device.

(c) During any performance tests required under Section 1.4 or within 30 days thereafter and at such other times as may be required by the Secretary, the person responsible for any applicable source shall conduct continuous monitoring system performance evaluations and furnish the Secretary within 60 days thereof a written report of the results of such tests. These continuous monitoring system performance evaluations shall be conducted in accordance with the following specifications and procedures:

(1) Continuous monitoring systems for measuring opacity of emissions shall comply with Performance Specification 1.

(2) Continuous monitoring systems for measuring nitrogen oxides emissions shall comply with Performance Specification 2.

(3) Continuous monitoring systems for measuring sulfur dioxide emissions shall comply with Performance Specification 2.

(4) Continuous monitoring systems for measuring the oxygen content or carbon dioxide content of effluent gases shall comply with Performance Specification 3.

(d) Performance specifications of this section are synonymous with those set forth in Appendix B in the Federal Register, Volume 40, Number 194, dated Monday, October 6, 1975, which are hereby adopted by reference with the word substitution "Secretary" for "Administrator."

(e) Calibration checks and zero and span adjustments and reporting of data on all continuous monitoring equipment shall be in accordance with methods approved by the Department. Such methods shall as a minimum, comply with Section 60.13(d) in the Federal Register, Volume 40, Number 194, dated Monday, October 6, 1975, which is hereby adopted by reference with the word substitution "Secretary" for "Administrator."

(f) When the effluents from a single applicable source or two or more applicable sources subject to the same emission standards are combined before being released to the atmosphere, the person may, subject to approval by the Secretary install applicable continuous monitoring systems on each effluent, but otherwise shall install such systems on the combined effluent. When the applicable sources are not subject to the same emission standards, separate continuous monitoring systems shall be installed on each effluent. When the effluent from one applicable source is released to the atmosphere through more than one point, the person shall install applicable continuous monitoring systems on each separate effluent unless the installation of fewer systems is approved by the Secretary.

(g) (1) An owner or operator who, prior to September 11, 1974, entered into a binding contractual obligation to purchase specific continuous monitoring system components except as referenced by section (g) (1) (iii) of this section shall comply with the following requirements:

(i) Continuous monitoring systems for measuring opacity of emissions shall be capable of measuring emission levels within ±20 percent with a confidence level of 95 percent.

(ii) Continuous monitoring systems for measurement of nitrogen oxides or sulfur dioxide shall be capable of measuring emission levels within ±20 percent with a confidence level of 95 percent.

(iii) Owners or operators of all continuous monitoring systems installed on an applicable source prior to October 6, 1975, are not required to conduct tests under section (g) (1) (i) and/or (ii) of this section unless requested by the Secretary.

(2) All continuous monitoring systems referenced by section (g) (1) of this section shall be upgraded or replaced (if necessary) with new continuous monitoring systems, and such improved systems shall be demonstrated to comply with applicable performance specifications under subsection (c) of this section by September 11, 1979.

(h) Except for system breakdowns, repairs, calibration checks, and zero and span adjustments required herein, all continuous monitoring systems shall be in continuous operation and shall meet minimum frequency of of operation requirements as follows:

(1) All continuous monitoring systems referenced by section (g) (1) and (2) of this section for measuring opacity of emissions shall complete a minimum of one cycle of operation (sampling, analyzing and data recording) for each successive 10-second period.

(2) All continuous monitoring systems referenced by section (g) (1) of this section for measuring oxides of nitrogen, sulfur dioxide, carbon dioxide, or oxygen shall complete a minimum of one cycle of operation (sampling, analyzing, and data recording) for each successive 15-minute period.

(3) All continuous monitoring systems referenced by section (g) (2) of this section, except opacity, shall

complete a minimum of one cycle of operation (sampling, analyzing, and data recording) for each successive one-hour period.

(i) All continuous monitoring systems or monitoring devices shall be installed such that representative measurements of emissions or process parameters from the applicable source are obtained. Additional procedures for location of continuous monitoring systems contained in the applicable Performance Specifications shall be used.

(j) Owners or operators of all continuous monitoring systems for measuring opacity shall reduce all data to fifteen-second averages. Consecutive fifteen-second averages, each less than the applicable standard may be recorded cumulatively. Fifteen-second averages in excess of the applicable standard shall be recorded for the time of occurrence. Any such averages in excess of the applicable standard shall be reported to the Department as excess emissions.

For systems other than opacity, one-hour averages shall be computed from four or more data points equally spaced over each one-hour period. Data recorded during periods of system breakdowns, repairs, calibration checks, and zero and span adjustments shall not be included in the data averages computed under this section. An arithmetic or integrated average of all data may be used. The data output of all continuous monitoring systems may be recorded in reduced or nonreduced form (e.g. ppm pollutant and percent O2 or 1b/million BTU of pollutant). All excess emissions shall be converted into units of standard using the applicable conversion procedures specified in subsections. After conversion into units of the standard, the data may be rounded to the same number of significant digits used in subsections to specify the applicable standard (e.g., rounded to the nearest one percent opacity).

(i) Upon written application by an owner or operator, the Secretary may approve alternatives to any monitoring procedures or requirements of this section including, but not limited to the following:

(1) Alternative monitoring requirements when installation of a continuous monitoring system or monitoring device specified by this section would not provide accurate measurements due to liquid water or other other substances interfering with the effluent gases.
(2) Alternative monitoring requirements when the applicable source is infrequently operated.
(3) Alternative monitoring requirements to accommodate continuous monitoring systems that require additional measurements to correct for stack moisture conditions.
(4) Alternative locations for installing continuous monitoring systems or monitoring devices when the owner or operator can demonstrate that installation at alternative locations will enable accurate and representative measurements.
(5) Alternative methods of converting pollutant concentration measurements to units of the standards.
(6) Alternative procedures for performing daily checks of zero and span drift that do not involve use of span gases or test cells.
(7) Alternative to the A.S.T.M. test methods or sampling procedures specified by any subsection.
(8) Alternative continuous monitoring systems that do not meet the design or performance requirements in Performance Specification 1, but adequately demonstrate a definite and consistent relationship between its measurements and the measurements of opacity by a system complying with the requirements in Performance Specification 1. The Secretary may require that such demonstration be performed by each applicable source.
(9) Alternative monitoring requirements when the effluent from a single applicable source or the combined effluent from two or more applicable sources are released to the atmosphere through more than one point.

1.4 Performance Tests

(a) Within 60 days after achieving the maximum production rate at which the applicable source will be operated, but not later than 180 days after initial startup of such facility and at such other times as may be required by the Secretary, the person responsible for such source shall conduct performance test(s) and furnish the Secretary a written report of the results of such performance test(s). The Department may conduct or contract for the conduct of a performance test whenever it concludes that such test is necessary to determine compliance.

(b) Performance tests shall be conducted and data reduced in accordance with the test methods and procedures contained in each applicable subsection unless the Secretary (1) specifies or approves, in specific cases, the use of a reference method with minor changes in methodology, (2) approves the use of an equivalent method, (3) approves the use of an alternative method the results of which he has determined to be adequate for indicating whether a specific source is in compliance, or (4) waives the requirement for performance tests because the owner or operator of a source has demonstrated by other means to the Secretary's satisfaction that the applicable source is in compliance with the standard.

(c) Performance tests shall be conducted on representative performance of the applicable source. The Secretary may specify additional operating conditions to be tested. The person responsible for the applicable source shall make available to the Department a record of those operating parameters which the Secretary determines appropriate to establish representative performance of the source. Operations during period of startup, shutdown, and malfunction shall not constitute representative conditions of performance tests unless otherwise specified in the applicable standard. The person responsible for an applicable source shall provide the Secretary 30 days prior notice of the performance test to afford the Secretary the opportunity to have an observer present.

(d) The person responsible for an applicable source shall provide or cause to be provided, performance testing facilities as follows:

(1) Sampling ports adequate for test methods applicable to such facility.
(2) Safe sampling platform(s).
(3) Safe access to sampling platform(s).
(4) Utilities for sampling and testing equipment.

(e) Each performance test shall consist of three seperate runs using the applicable test method. Each run shall be conducted for the time and under the conditions specified in the applicable standards. For the purpose of determining compliance, the arithmetic mean of results of the three runs shall apply.

.5 Compliance with Standard and Maintenance Requirements

(a) Compliance with standards in the regulation, other than opacity standards, shall be determined only by performance test established by subsection 1.4.

(b) Compliance with standards in this regulation shall be determined by Reference Methods 1 through 8, 10 and 11 set forth in Appendix A, 40 CFR Part 60, revised July 1, 1975, which are hereby adopted by reference. Where the person responsible for the applicable source can provide evidence acceptable to the Secretary that the presence of uncombined water is the only reason for failure to meet the opacity standard such failure shall not be a violation of the standard.

(c) Compliance with opacity standards in this Regulation shall be determined by conducting observations at consecutive fifteen-second intervals for a period of not less than one hour except that the observations may be discontinued whenever a violation of the applicable standard is recorded. The results of continuous monitoring by transmissometer which indicate that the opacity at the time visual observations were made was not in excess of the standard are probative but not conclusive evidence of the actual opacity of an emission, provided that the source shall meet the burden of proving that the instrument used meets, at the time of the alleged violation, Performance Specification 1, has been properly maintained and calibrated, and that the resulting data have not been tampered with in any way.

(1) The additional procedures, qualifications and testing to be used for visually determining the opacity of emissions shall be those specified in Section 2 and 3 (except for Section 2.5 and the second sentence of Section 2.4) of Reference Method 9 set forth in Appendix A, 40 CFR Part 60, revised July 1, 1975, which are hereby adopted by reference.

(d) The opacity standards set forth in this Regulation shall apply at all times including periods of startup and shutdown unless the emissions during startup and shutdown are governed by an operation permit.

(e) At all times, including periods of startup, shutdown, and malfunction, owners and operators shall, to the extent practicable, maintain and operate any applicable source including associated air pollution control equipment in a manner consistent with good air pollution control practice for minimizing emissions. Determination of whether acceptable operating and maintenance procedures are being used will be based on information available to the Secretary which may include, but is not limited to, monitoring results, opacity observations, review of operating and maintenance procedures, and inspection of the source.

1.6 Circumvention

(a) No owner or operator subject to the provisions of this section shall build, erect, install, or use any article, machine, equipment or process, the use of which conceals an emission which would otherwise constitute a violation of an applicable standard. Such concealment includes, but is not limited to, the use of gaseous dilutants to achieve compliance with an opacity standard or with a standard which is based on the concentration of a pollutant in the gases discharged to the atmosphere.

Section 2 - Standards of Performance for Fuel Burning Equipment

2.1 Applicability

(a) The provisions of this section are applicable to any fuel burning equipment of more than 250 million BTU per hour heat input, which is the applicable source. Any change to existing fuel burning equipment to accommodate the use of combustible fuels other than fossil fuels as defined herein shall not bring that equipment under the applicability of this section.

2.2 Standard for Particulate Matter

(a) On and after the date on which the initial performance test is completed no person subject to the provisions of this section shall discharge or cause the discharge into the atmosphere of particulate matter which is:
  (1) In excess of 0.10 lb. per million BTU heat input (0.18 grams per million calories heat input).
  (2) Greater than 20 percent opacity, except that a maximum of 40 percent opacity shall be permissible for not more than 2 minutes in any hour.

2.3 Standard for Sulfur Dioxide

(a) On and after the date on which the initial performance test is completed with respect to a new stationary source in New Castle County, the construction, reconstruction, or modification of which was commenced on after August 17, 1971, no person subject to the provisions of this section shall discharge or cause the discharge into the atmosphere of sulfur dioxide in excess of 0.8 pound per million BTU heat input (1.4 g. per million cal).

(b) On and after the date on which the initial performance test is completed with respect to a new stationary source in either Kent or Sussex Counties, the construction, reconstruction, or modification of which was commenced on or after August 17, 1971, no person subject to the provisions of this section shall discharge or cause the discharge into the atmosphere of sulfur dioxide in excess of 1.20 pounds per million BTU heat input (2.1 g. per million cal).

(c) Compliance shall be based on the measured quantity of sulfur dioxide emitted divided by the total heat input for all fossil fuels burned, including gaseous fuels.

2.4 Standard for Nitrogen Oxides

(a) On and after the date on which the initial performance test is completed no person subject to the provisions of this section shall discharge or cause the discharge into the atmosphere of nitrogen oxides in excess of:
  (1) 0.20 lb. per million BTU heat input (0.36 g. per million cal.), expressed as NO2, when gaseous fossil fuel is burned.
  (2) 0.30 lb. per million BTU heat input (0.54 g. per million cal.), expressed as NO2, when liquid fossil fuel is burned.
  (3) 0.70 lb. per million BTU heat input (1.26 g. per million cal.), expressed as NO2, when solid fossil fuel is burned.

(b) When different fossil fuels are burned simultaneously in any combination the applicable standard shall be determined by proration using the following formula:

$$\frac{X(0.20) + Y(0.30) + Z(0.70)}{X+Y+Z}$$

Where:
X is the percent of total heat input derived from gaseous fossil fuel and
Y is the percent of total heat input derived from liquid fuel and
Z is the percent of total heat input derived from solid fuel.

2.5 Emission and Fuel Monitoring

(a) A continuous monitoring system for measuring the opacity of emissions, except where gaseous fuel is the only fuel burned, shall be installed, calibrated, maintained, and operated by the person responsible for the applicable source. The continuous monitoring system shall be spanned at 80 or 90 or 100 percent opacity.

(b) A continuous monitoring system for measuring sulfur dioxide emissions, shall be installed, calibrated, maintained and operated by the person responsible for the applicable source except where gaseous fuel is the only fuel burned or where low sulfur fuels are used to achieve compliance with the standard under Section 2.3 and fuel analyses under subsection (b) (2) are conducted. The following procedures shall be used for monitoring sulfur dioxide emissions:

(1) For applicable sources which are continuous monitoring systems, Reference Method 6 shall be used for conducting monitoring system performance evaluations under section 1.3(c). The pollutant gas used to prepare calibration gas mixtures under subsection 2.1, Performance Specification 2 and for calibration checks under secion 1.3(d) shall be sulfur dioxide (SO2). The span value for the continuous monitoring system shall be determined as follows:

(i) For applicable sources firing liquid fossil fuel the span value shall be 1000 ppm sulfur dioxide.

(ii) For applicable sources firing solid fossil fuel the span value shall be 1500 ppm sulfur dioxide.

(iii) For applicable sources firing fossil fuels in any combination, the span value shall be determined by computation in accordance with the following formula and rounding to the nearest 500 ppm sulfur dioxide:

$$1000Y + 1500Z$$

Where:

Y = the fraction of total heat input derived from liquid fossil fuel, and
Z = the fraction of total heat input derived from solid fossil fuel.

(iv) For applicable sources which fire both fossil fuels and non-fossil fuels, the span value shall be subject to the Secretary's approval.

(2) For applicable sources using flue gas desulfurization systems to achieve compliance with sulfur dioxide standards under section 2.3, the continuous monitoring system for measuring sulfur dioxide emissions shall be located downstream of the desulfurization system and in accordance with requirements in Performance Specification 2 and, other requirements of the Secretary which as a minimum shall be those specified in Section 60.45 (b) (3) of Vol. 40, No. 194 of the Federal Register dated October 6, 1975.

(c) A continuous monitoring system for the measurement of nitrogen oxides emissions shall be installed, calibrated, maintained, and operated by the responsible person except for any applicable source demonstrated during performance tests under Section 1.4 to emit nitrogen oxides pollutants at levels 30 percent or more below applicable standards under Section 2.4. The following procedures shall be used for determining the span and for calibrating nitrogen oxides continuous monitoring systems:

(1) The span value shall be determined as follows:

(i) For applicable sources firing gaseous fossil fuel the span value shall be 500 ppm nitrogen oxides.

(ii) For applicable sources firing liquid fossil fuel the span value shall be 500 ppm nitrogen oxides.

(iii) For applicable souces firing solid fossil fuel the span value shall be 1000 ppm nitrogen oxides.

(iv) For applicable sources firing fossil fuels in any combination, the span value shall be determined by by computation in accordance with the following formula and rounding to the nearest 500 ppm nitrogen oxides:

$$500(X+Y) + 1000Z$$

Where:

X = the fraction of total heat input derived from gaseous fossil fuel,
Y = the fraction of total heat input derived from liquid fossil fuel, and
Z = the fraction of total heat input derived from solid fossil fuel.

(v) For applicable sources which fire both fossil fuels and non-fossil fuels, the span value shall be subject to the Secretary's approval.

(2) The pollutant gas used to prepare calibration gas mixtures under subsection 2.1, Performance Specification 2 and for calibration checks under Section 1.3(d) shall be nitric oxide (NO). Reference Method 7 shall be used for conducting monitoring system performance evaluations under Section 1.3(c).

(d) A continuous monitoring system for measuring either oxygen or carbon dioxide in the flue gases shall be installed, calibrated, maintained, and operated by the person responsible for the applicable source.

(e) Any person required to install continuous monitoring systems under sections (b) and (c) shall for each pollutant monitored use the applicable conversion procedure for the purpose of converting continuous monitoring data into the units of the applicable standards. The applicable conversion procedures shall be those set forth in paragraphs (e) and (f) of Section 60.45 of Vol. 40, No. 194 of the Federal Register dated October 6, 1975.

(f) For the purpose of reports required under Section 1.2, periods of excess emissions that shall be reported are defined as follows:
  (1) Sulfur dioxide - Excess emissions for applicable sources are defined as:
    (i) Any three-hour period during which the average emissions (arithmetic average of three continuous one-hour periods) of sulfur dioxide as measured by a continuous monitoring system exceed the applicable standard under Section 2.3.
  (2) Nitrogen Oxides - Excess emissions for applicable sources using a continuous monitoring system for measuring nitrogen oxides are defined as any three-hour period during which the average emissions (arithmetic average of three continuous one-hour periods) exceed the applicable standards under Section 2.4.

2.6 Test Methods and Procedures

(a) All performance tests shall be conducted while the applicable source is operating at or above the maximum steam production rate at which such facility will be operated and while fuels or combinations of fuels representative of normal operation are being burned and under such other relevant conditions as the Secretary shall specify based on representative performance of the applicable source.

(b) The reference methods in Appendix A of this regulation, except as provided in Section 1.4(b), shall be used to determine compliance with the standards prescribed herein as follows:
  (1) Method 1 for selection of sampling site and sample traverses.
  (2) Method 3 for gas analysis to be used when applying Reference Methods 5, 6, and 7.
  (3) Method 5 for concentration of particulate matter and the associated moisture content.
  (4) Method 6 for concentration of SO2, and
  (5) Method 7 for concentration of NOx.

(c) For Method 5, the sampling time for each run shall be at least 60 minutes and the minimum sample volume shall be 0.85 dscm (30.0 dscf), except that smaller sampling times or volumes, when necessitated by process variables or other factors may be approved by the Secretary. The probe and filter holder heating systems in the sampling train shall be set to provide a gas temperature no greater than 160°C (320°F).

(d) For Methods 6 and 7, the sampling site shall be the same as that for determining volumetric flow rate. The sampling point in the duct shall be at the centroid of the cross section or at a point no closer to the walls than 1 m. (3.28 ft.).

(e) For Method 6, the minimum sampling times shall be 20 minutes and the minimum sample volume shall be 0.02 dscm (0.71 dscf). The sample shall be extracted at a rate proportional to the gas velocity at the sampling point. The arithmetic average of two samples shall constitute one run. Samples shall be taken at approximately 30-minute intervals.

(f) For Method 7, each run shall consist of at least four grab samples taken at approximately 15-mintue intervals. The arithmetic mean of the samples shall constitute the run value.

(g) For each run, the emissions expressed in g/million cal (lb./million BTU) shall be determined by the following procedure:

$$E = CF \frac{(\ 20.9\ )}{(20.9 - \%O_2)}$$

Where:
  (1) E = pollutant emission, g/million cal (lb/million BTU).
  (2) C = pollutant concentration, g/dscm (lb/dscf), determined by Methods 5, 6, or 7.
  (3) %02 = oxygen content by volume (expressed as percent), dry basis, Percent Oxygen shall be determined by using the integrated or grab sampling and analysis procedures of Method 3 as applicable. The sample shall be obtained as follows:
    (i) For determination of sulfur dioxide and nitrogen oxides emissions, the oxygen sample shall be obtained simultaneously at the same point in the duct as used to obtain the samples for Methods 6 and 7 determinations, respectively. For Method 7, the oxygen sample shall be obtained using the grab sampling and analysis procedures of Method 3.
    (ii) For determination of particulate emissions, the oxygen sample shall be obtained simultaneously by

traversing the duct at the same sampling location used for each run of Method 5 under paragraph (c) of this section. Method 1 shall be used for selection of the number of traverse points except that no more than 12 sample points are required.

(4) F = Factor to be determined by Methods approved by the Secretary.

(h) When combinations of fossil fuels are fired, the heat input, expressed in cal/hr (BTU/hr), shall be determined during each testing period by multiplying the gross calorific value of each fuel fired by the rate of each fuel burned. Gross calorific value shall be determined in accordance with A.S.T.M. methods D2015-66(72) (solid fuels,) D240-64(73) (liquid fuels), or D1826-64(70) (gaseous fuels) as applicable. The rate of fuels burned during each testing period shall be determined by suitable methods and shall be confirmed by a material balance over the steam generation system.

Section 3 - Standards of Performance for Nitric Acid Plants

3.1 Applicability

(a) The provisions of this section are applicable to each nitric acid production unit, which is the applicable source.

3.2 Standard for Nitrogen Oxides

(a) On and after the date on which the performance test is completed no person subject to the provisions of this section shall discharge or cause the discharge into the atmosphere of nitrogen oxides which are:

(1) In excess of 3.0 lbs. per ton of acid produced (1.5 kg. per metric ton) expressed as HNO3.

(2) 10 percent opacity or greater.

3.3 Emission Monitoring

(a) A continuous monitoring system for the measurement of nitrogen oxides shall be installed, calibrated, maintained, and operated by the person responsible for the applicable source. The pollutant gas used to prepare calibration gas mixtures under paragraph 2.1, Performance Specification 2 and for calibration checks under Section 1.3(e) shall be nitrogen dioxide (NO2). The span shall be set at 500 ppm of nitrogen dioxide. Reference Method 7 shall be used for conducting monitoring system performance evaluations under Section 1.3(c).

(b) The responsible person shall establish a conversion factor, approved by the Department for the purpose of converting monitoring data into units of the applicable standard (kg/ metric ton, lb/short ton). The conversion factor shall be established by measuring emissions with the applicable reference method tests. Using only that portion of the continuous monitoring emission data that represents emission measurements concurrent with the reference method test periods, the conversion factor shall be determined by dividing the reference method test data averages by the monitoring data averages to obtain a ratio expressed in units of the monitoring data, i.e., kg/metric ton per ppm (lb/short ton per ppm). The conversion factor shall be reestablished during any performance test under Section 1.4 or any continuous monitoring system performance evaluation under Section 1.3(c).

(c) The responsible person shall record the daily production rate and hours of operation.

(d) For the purpose of reports required under Section 1.2(c), periods of excess emissions that shall be reported are defined as any three-hour period during which the average nitrogen oxides emissions (arithmetic average of three continuous one-hour periods) as measured by a continuous monitoring system exceed the standard under Section 3.2(a).

3.4 Test Methods and Procedures

(a) All performance tests shall be conducted while the applicable source is operating at or above the maximum acid production rate at which such facility will be operated and under such other relevant conditions as the Secretary shall specify based on representative performance of the applicable source.

Section 4 - Standards of Performance for Storage Vessels for Petroleum Liquid

4.1 Applicability

(a) Except as provided in subsection 4.1(b), the applicable source to which this section applies is each storage vessel for petroleum liquids which have a storage capacity greater than 151, 412 liters (40,000 gallons).

(b) This section does not apply to storage vessels for the crude petroleum or condensate stored, processed, and/or treated at a drilling and production facility prior to custody transfer.

4.2 Standard for Hydrocarbons

(a) The person responsible for any storage vessel to which this section applies shall store petroleum liquids as follows:

(1) If the true vapor pressure of the petroleum liquid, as stored, is equal to or greater than 78 mm. Hg. (1.5 psia) but not greater than 570 mm. Hg. (11.1 psia), the storage vessel shall be equipped with a floating roof, a vapor recovery system, or their equivalent.

(2) If the true vapor pressure of the petroleum liquid as stored is greater than 570 mm. Hg. (11.1 psia), the storage vessel shall be equipped with a vapor recovery system or its equivalent.

4.3 Monitoring of Operations

(a) The person responsible for any storage vessel to which this section applies shall for each storage vessel maintain a file of each type of petroleum liquid stored, of the typical Reid vapor pressure of each type of petroleum liquid stored and of the dates of storage. Dates on which the storage vessel is empty shall be shown.

(b) The person responsible for any storage vessel to which this section applies shall for each storage vessel determine and record the average monthly storage temperature and true vapor pressure of the petroleum liquid stored at such temperature if:

(1) The petroleum liquid has a true vapor pressure, as stored, greater than 26mm. Hg. (0.5 psia) but less than 78 mm. Hg. (1.5 psia) and is stored in a storage vessel other than one equipped with a floating roof, a vapor recovery system or their equivalents; or

(2) The petroleum liquid has a true vapor pressure, as stored greater than 470 mm. Hg. (9.1 psia) and is stored in a storage vessel other than one equipped with a vapor recovery system or its equivalent.

(c) The average monthly storage temperature is an arithmetic average calculated for each calendar month, or portion thereof if storage is for less than a month, from bulk liquid storage temperatures determined at least once every 7 days.

(d) The true vapor pressure shall be determined by the procedures in API Bulletin 2517. This procedure is dependent upon determination of the storage temperature and the Reid vapor pressure, which required sampling of the petroleum liquids in the storage vessels. Unless the Secretary required in specific cases that the stored petroleum liquid be sampled, the true vapor pressure may be determined by using the average monthly storage temperature and the typical Reid vapor pressure. For those liquids for which certified specifications limiting the Reid vapor pressure exist, that Reid vapor pressure may be used. For other liquids, supporting analytical data must be made available on request to the Secretary when typical Reid vapor pressure is used.

Section 5 - Standards of Performance for Asphalt Concrete Plants

5.1 Applicability

(a) The provisions of this regulation apply to each asphalt concrete plant, which is the applicable source.

5.2 Standard for Particulate Matter

(a) On and after the date on which the initial performance test is completed no person subject to the provisions of this section shall discharge or cause the discharge into the atmosphere from any applicable source any gases which:

(1) Contain particulate matter in excess of 0.04 grain per dry standard cubic foot.

(2) Exhibit 20 percent opacity, or greater.

3 Test Methods and Procedures

(a) In addition to the test methods specified in Appendix A, the following procedures are applicable:

(1) Method 5 for the concentration of particulate matter and the associated moisture content.

(2) Method 1 for sample and velocity traverses.
(3) Method 2 for velocity and volumetric flow rate.
(4) Method 3 for gas analysis.
(5) For Method 5, the sampling time for each run shall be at least 60 minutes and the sampling rate shall be at least 0.9 dscm/hr. (0.53 dscf/min.), except that shorter sampling times, when necessitated by process variables or other factors, may be approved by the Secretary.

Section 6 - Standards of Performance for Incinerators

6.1 Applicability

(a) The provisions of this section are applicable to each incinerator of more than 3,000 pounds per hour charging rate, which is the applicable source.

6.2 Standard for Particulate Matter

(a) On and after the date on which the performance test required to be conducted is completed, no person responsible for the applicable source shall cause to be discharged into the atmosphere any gases which contain particulate matter in excess of 0.18 g./dscm (0.08 g./dscf) corrected to 12 percent CO_2.

6.3 Emission Monitoring

(a) The person responsible for any incinerator subject to the provisions of this regulation shall record the hourly charging rates and hours of operation.

Section 7 - Standards of Performance for Sewage Treatment Plants

7.1 Applicability

(a) The applicable sources to which the provisions of this section apply is each incinerator which burns the sludge produced by municipal sewage treatment facilities.

7.2 Standard for Particulate Matter

(a) On and after the date on which the performance test required to be conducted by Section 1.4 is completed, no person responsible for any sewage sludge incinerator subject to the provisions of this subsection shall discharge or cause the discharge into the atmosphere of:
    (1) Particulate matter at a rate in excess of 0.65 g/kg dry sludge input (1.30 lb/ton dry sludge input).
    (2) Any gases which exhibit 20 percent opacity or greater.

7.3 Emission Monitoring

(a) The person responsible for any sludge incinerator subject to the provisions of the subsection shall:
    (1) Install, calibrate, maintain, and operate a flow measuring device which can be used to determine either the mass or volume of sludge charged to the incinerator. The flow measuring device shall have an accuracy of ±5.0 percent over its operating range.
    (2) Provide access to the sludge charged so that a well-mixed representative grab sample of the sludge can be obtained.

7.4 Test Methods and Procedures

(a) The reference methods except as provided for in Section 1.4(b), to be used to determine compliance with the standards prescribed in Section 7.2 are as follows:
    (1) Method 5 for concentration of particulate matter and associated moisture content,
    (2) Method 1 for sample and velocity traverses,
    (3) Method 2 for volumetric flow rate, and
    (4) Method 3 for gas analysis.

(b) For Method 5, the sampling time for each run shall be at least 60 minutes and the sampling rate shall be at

WASHINGTON, D. C.

SECTION 802:706

(a) Designation of Affected Facilities. This section shall apply to fossil fuel-fired steam generating units of more than 100,000,000 B.T.U. per hour heat input.

(b) Standard of Nitrogen Oxides. No person shall discharge or cause the discahrge into the atmosphere of nitrogen oxides in excess of the emission limits set forth hereinafter in Appendix No. 3.

SECTION 8-2: 710

(b) Sulfur Oxides. No person shall cause, suffer, or allow discharges into the atmosphere of sulfur oxides calculated as sulfur dioxide, in excess of 0.03% by volume.

SECTION 8-2:713

Except as otherwise provided in this regulation, no person shall cause, suffer, or allow to be emitted into the outdoor atmosphere, visible emissions from stationary sources: Provided, That discharges not exceeding 20% opacity shall be permitted for 2 minutes in any 60 minute period and for an aggregate of 12 minutes in any 24 hour period. These discharges shall be allowed only for "start-up", cleaning, soot blowing, and/or adjusting combustion controls of boilers. Where the presence of uncombined water is the only reason for failure of an emission to meet the requirements of this section, this section shall not be applicable. The provisions of this section shall not apply to visible emissions from interior fireplaces, or from sources set forth in Section 8-2:714(b).

APPENDIX 3

Emission limits for nitrogen oxide in fossil fuel fired steam generating units of more than 100,000,000 B.T.U. per hour heat input are as follows:

(a) 0.20 lb. per million B.T.U. heat input (0.36 g. per million cal.) maximum 2-hour average, expressed as NO_2, when gaseous fossil fuel is burned.

(b) 0.30 lb. per million B.T.U. heat input (0.54 g. per million cal.) maximum 2-hour average, expressed as NO_2, when liquid fossil fuel is burned.

(c) 0.70 lb. per million B.T.U. heat input (1.26 g. per million cal.) maximum 20 hour average, expressed as NO_2, when solid fossil fuel (except lignite) is burned.

(d) When different fossil fuels are burned simultaneously in any combination the applicable standard shall be determined by proration, according to the following formula:

$$\frac{x\ (0.20) + y\ (0.30) + z\ (0.70)}{x + y + z}$$

x is the percent of total heat input derived from gaseous fossil fuel;

y is the percent of total heat input derived from liquid fossil fuel; and

z is the percent of total heat input derived from solid fossil fuel.

to the Commissioner during regular business hours.

(c) Monitoring Devices. The Commissioner shall require the owner or operator of a stationary source which emits more than 100 tons per year of any air pollutant to install, maintain, and operate, at the expense of said owner or operator, such stationary source monitoring devices as may be necessary to enable such owner or operator and the Commissioner to determine whether the source is being, or will be operated in compliance with all applicable air pollution standards, regulations, and laws. Monitoring information shall be supplied as the Commissioner may require in accordance with subsection (a) of this section.

(d) Prohibited Devices. No person shall install or use any article, machine, equipment, device, or other contrivance which conceals an emission from any source.

Section 8-2:718. SAMPLING, TESTS, AND MEASUREMENTS.

(a) General. The Commissioner may conduct or cause to be conducted, or require an owner or operator to conduct, tests of emission of air pollutants from any source. Upon request to the Commissioner, the person responsible for the source to be tested shall provide necessary holes in stacks or ducts and such other safe and proper sampling and testing facilities as may be necessary for proper determination of the emission of air pollutants. The Commissioner may take or cause to be taken samples of fuel by any appropriate means, in such quantities as he feels are necessary for purposes of determining compliance with this regulation.

(b) Particulate Matter. Stack tests for particulate matter shall be undertaken by generally recognized standards or methods of measurement. Methods found in the American Society of Mechanical Engineers Test Code for Dust Separating Apparatus, PTC 21-1941, the American Society of Mechanical Engineers Test Code for Determining Dust Concentration in Gas Streams, PTC 27-1957, and the Los Angeles County California Source Testing Manual shall be used, but such methods may be modified or adjusted by the Commissioner to suit specific sampling conditions or needs based upon good practice, judgment, and experience.

(c) Sulfur. The method for determining the sulfur content of fuel oil shall be that described in the American Society for Testing and Materials publication, D-129-64, "Standard Method of Test for Sulfur in Petroleum Products and Lubrications by the Bomb Method". The method for determining the sulfur content of coal shall be that described in the American Society for Testing and Materials publication, D-271-61, "Laboratory Sampling and Analysis of Coal and Coke." Equivalent method may be approved by the Commissioner.

(d) Visible Emissions. The Ringelmann Smoke Chart published and described in the United States Bureau of Mines Information Circular 8333, or any other chart, recorder, indicator or device approved by the Commissioner for the measurement of plume density shall be used in determining the grade of shade or opacity of visible air contamination emissions.

FLORIDA

17-2.04 Prohibitive Acts

(1) Visible Emissions — No person shall cause, let, permit, suffer or allow to be discharged into the atmosphere any air pollutants from:

(a) Existing Sources, until July 1, 1975, the density of which is equal to or greater than that designated as Number 2 on the Ringelmann Chart or the opacity of which is equal to or greater than 40 percent.

(b) New Sources, and after July 1, 1975, existing sources, the density of which is equal to or greater than that designated as Number 1 on the Ringelmann Chart or the opacity of which is equal to or greater than 20 percent.

(a) Incinerators

1. The emission limiting standards for new incinerators with a charging rate of fifty or more tons per day are:

a. Particulate matter — 0.08 grains per standard cubic foot dry gas corrected to 50 percent excess air.

b. Odor — there shall be no objectionable odor.

2. The emission limiting standards for new incinerators with a charging rate of less than fifty tons per day are:

a. Visible emissions — no visible emissions except, visible emissions are allowable for up to three minutes in any hour at densities up to but not more than, a density of Ringelmann Number 1. (Opacity of 20 percent)

(b) Sulfuric Acid Plants — the emission limiting standards for sulfuric acid plants are:

1. Existing Plants

a. Sulfur dioxide (SO_2) — ten pounds of SO_2 per ton of 100 percent H_2SO_4 produced, as expeditiously as possible but not later than July 1, 1975; in the Florida portion of the Jacksonville, Florida-Brunswick, Georgia, Interstate Air Quality Control Region as defined in 40 C.F.R. Section 81.91, twenty-nine pounds of SO_2 per ton of 100 percent H_2SO_4 produced as expeditiously as possible but not later than July 1, 1975.

b. A plume with visibility no greater than 10 percent opacity.

2. New Plants

a. Sulfur dioxide — four pounds of SO_2 per ton of 100 percent H_2SO_4 produced.

b. Acid Mist — 0.15 pounds per ton of 100 percent acid produced.

c. A plume with visibility no greater than 10 percent opacity.

(d) Kraft (sulfate liquor) Pulp Mills

1. Black liquor recovery furnace. The emission limiting standards are:

a. Particulate matter existing sources as expeditiously as possible, but not later than July 1, 1975, no greater than three pounds particulate per each 3,000 pounds black liquor solids fed. For new sources the same emission limiting standards apply.

b. Total Reduced Sulfur — existing plants as expeditiously as possible, but not later than July 1, 1975 — 17.5 ppm expressed as H_2S on a dry gas basis, or one-half (0.5) pounds per 3,000 pounds of black liquor solids fed, whichever is more restrictive. For new plants no greater than 1 ppm expressed as H_2S on the dry basis, or 0.03 pounds per 3,000 pounds of black liquor solids fed, whichever is the more restrictive.

(e) Fossil Fuel Steam Generators — The emission limiting standards for Fossil Fuel Steam Generators are:

1. New Sources — plants with more than 250 million BTU per hour heat input.

a. Particulate matter — 0.1 pounds per million BTU heat input, maximum 2 hour average.

b. Visible emissions -- the density of which is equal to or greater than Number 1 of the Ringelmann Chart (20 percent opacity) except that a shade as dark as Number 2 of the Ringelmann Chart (40 percent opacity) shall be permissible for not more than 2 minutes in any hour.

c. Sulfur dioxide — 0.8 pounds per million BTU heat input, maximum 2 hour average, when liquid fuel is burned.

d. Sulfur dioxide — 1.2 pounds per million BTU heat input, maximum 2 hour average, when solid fuel is burned.

e. Nitrogen oxides — 0.20 pounds per million BTU heat input maximum 2 hour average, expressed as NO_2 when gaseous fuel is burned.

f. Nitrogen oxides — 0.30 pounds per million BTU heat input, maximum 2 hour average, expressed as NO_2 when liquid fuel is burned.

g. Nitrogen oxides — 0.70 pounds per million BTU heat input, maximum 2 hour average, expressed as NO_2 when solid fuel is burned.

2. Existing Sources — plants with more than 250 million BTU per hour heat input.

a. Particulate no greater than the standard for new sources.

b. Visible emissions — no greater than the standard for new sources.

(c) Sulfur dioxide emissions — When liquid fuel is burned emissions shall be no greater than 2.75 pounds per million BTU heat input for sources in all areas of the State except as follows:

(i) 2.5 pounds per million BTU heat input for sources north of Hecksher Drive within Duval County and 1.65 pounds per million BTU heat input for all other sources in Duval County.

(ii) 1.1 pounds per million BTU heat input for all sources in Hillsborough County including Tampa Electric Company's Gannon Station Units 1 through 4 and Hooker's Point Generation Station.

d. Sulfur dioxide emissions — When solid fuel is burned emissions shall be no greater than 6.17 pounds per million BTU heat input for sources in all areas of the State, except for the following sources in Hillsborough County the emissions shall be no greater than:

(i) 2.4 pounds per million BTU heat input for Units 5 and 6 at Tampa Electric Company's Franck J. Gannon Generating Station and;

(ii) 6.5 pounds per million BTU heat input at Tampa Electric Company's Big Bend Generating Station.

e. This rule shall be re-evaluated and reconsidered by the Board at public hearing prior to July 1, 1977. As part of the re-evaluation and reconsideration required by this rule, the Department shall consider and give due weight to all competent substantial evidence including any findings and conclusions of any studies directed or supervised by the Board. Unless the Board finds that the emission limitations set forth in Section 17-2.04(6)(e) 2.c & d adequately protect public health and welfare, existing fossil fuel steam generators shall be subjected to compliance schedules which must be submitted to the Department on or before August 1, 1977 and which propose increments of progress dates that will as expeditiously as possible bring them into compliance with the following emission limiting standards:

(i) Sulfur dioxide — 1.1 pounds per million BTU heat input when liquid fuel is burned.

(ii) Sulfur dioxide — 1.5 pounds per million BTU heat input when solid fuel is burned.

If the Board finds that the emission limitations set forth in 17-2.04(6) (e) 2.c & d adequately protect public health and welfare this rule shall be continued or amended to reflect such findings and conclusions.

f. Owners of fossil fuel steam generators shall monitor their emissions and the effects of the emissions on ambient concentrations of sulfur dioxide, in a manner, frequency, and locations approved, and deemed reasonably necessary and ordered by the Department. The owners shall submit to the Department a written proposal for such monitoring program on or before July 1, 1975.

g. A rule for limiting nitrogen oxides emission from existing fossil fuel steam generators will be developed by July 1, 1975.

3. New and existing plants with 250 million or less BTU per hour heat input.

a. Visible emissions standards as set forth in item 17-2.04(6)(e) 1.b. of this section.

b. Particulate matter, sulfur dioxide and nitrogen oxides apply 17-2.03(1) latest technology.

4. Compliance Schedules

(i) Compliance schedules, SO_2 Emissions for existing plants regulated by Section 17-2.04(6)(e) 2.c and d, Florida Administrative Code are repealed as of the effective date of this rule.

(ii) All fossil fuel steam generators, regardless of size, need not comply with any existing compliance schedule SO_2 Emissions required by the Department, but shall as expeditiously as possible comply with the specific emission standards set forth in Subsection 17-2.04(6)(e) 2.c and d or, if applicable, Subsection 17-2.04(6)(e) 3, at option of the owner.

5. If at any time the Board determines, after notice and public hearing, that appropriate and substantially lower sulfur fuels are available on a long term basis at a reasonably comparable cost (including all costs such as contract revision or termination costs) with fuels allowed under this rule, the Board may establish revised emission limiting standards.

(g) Nitric Acid Plants — the emission limiting standards for nitric acid plants producing weak nitric acid (50-70 percent) by pressure or atmospheric pressure process are:

1. New plants

a. Nitrogen oxides no greater than 3 pounds per ton of acid produced (100 percent basis)

b. Visible emission — no greater than 10 percent opacity.

2. Existing plants shall comply with the standard as expeditiously as possible but no later than July 1, 1975.

(h) Sulfur Recovery Plants — the emission limiting standards for sulfur recovery plants recovering sulfur from crude oil gas are:

1. New Plant

a. Sulfur oxides calculated as sulfur dioxide — no greater than 0.004 pounds of SO_2 per pound of sulfur input to the recovery system or no greater than 0.004 pounds of SO_2 per pound of sulfur removed from an oil well.

2. Existing Plants

a. For those sulfur recovery plants for which a valid Department Construction Permit was issued prior to July 1, 1973, the emission limiting standard shall be:

> no greater than 0.08 pounds of SO_2 per pound of sulfur input to the recovery system or no greater than 0.08 pounds of SO_2 per pound of sulfur removed from crude oil or gas processed.

(2) Visible Emissions

(a) For burners less than 30 million BTU/hr input — the visible emission or density shall not exceed Ringelmann I or an opacity of 20 per cent except that a density of Ringelmann II is permissible for not more than two minutes in any hour.

(b) For burners of capacity equal to or greater than 30 million BTU/hr input — the visible emission or density shall not exceed Ringelmann 1.5 or an opacity of 30 per cent except that a density of Ringelmann II or opacity of 40 per cent is permissible for not more than two minutes in any hour.

17-2.12 Source Testing Method.

Air Pollutant emissions shall be tested and analyzed in accordance with the Standard Sampling Techniques and Methods of Analysis for the Determination of Air Pollutants from Point Sources, January 1974, as adopted by the Board and as may be amended from time to time by the Board.

General Authority 403.061(7) FS. Law Implemented 403.021, 403.031, 403.061 FS. History—New 12-28-74.

(b) Smoke:

1. Except as may be provided in other more restrictive or specific sub-sections of this rule no person shall cause, suffer, allow or permit the emission from any air contaminant source of smoke the opacity of which is

(i) equal to or greater than No. 2 of the Ringelmann Smoke Chart, or equivalent opacity or,

(ii) Equal to or greater than No. 3 of the Ringelmann Smoke Chart, or equivalent opacity, for a period or aggregate period of time greater than three minutes in any one-half hour.

(c) Incinerators:

1. Except as specified in the section dealing with conical burners, no person shall cause or allow to be emitted into the open air from any incinerator constructed or extensively altered after January 1, 1972, air contaminants as follows:

(iv) smoke the opacity of which is equal to or greater than 20 percent (Ringelmann No. 1); or equal to or greater than 40 percent (Ringelmann No. 2) for three minutes in any one-half hour period.

2. No person shall cause or allow to be emitted into the open air from any existing incinerator constructed and put into operation before January 1, 1972, air contaminants as follows:

(iii) smoke the opacity of which is equal to or greater than 40 percent (Ringelmann No. 2), or equal to or greater than 60 percent (Ringelmann No. 3) for three minutes in any one-half hour.

3. No person shall cause, let, suffer, permit, or allow the emission from any fuel-burning equipment constructed or extensively modified after January 1, 1972, smoke equal to or greater than Ringelmann No. 1, or equivalent opacity; or equal to or greater than Ringelmann No. 2, or equivalent opacity, for a period of two minutes in any one hour.

4. No person shall cause, let, permit, suffer, or allow the emission of nitrogen oxides (NO_x), reported as nitrogen dioxide, from any fuel-burning equipment equal to or greater than 250 million BTU per hour of heat input that is constructed or extensively modified after January 1, 1972, equal to or exceeding the following:

(i) when firing coal—0.7 pounds of NO_x per million BTU's of heat input;

(ii) when firing oil—0.3 pounds of NO_x per million BTU's of heat input;

(iii) when firing gas—0.2 pounds of NO_x per million BTU's of heat input;

(iv) when different fuels are burned simultaneously in any combination the applicable standard, expressed as pounds of NO_x per million BTU's of heat input, shall be determined by proration. Compliance shall be determined by using the following formula:

$$\frac{x(0.20) + y(0.30) + z(0.70)}{x + y + z}$$

where:

x = percent of total heat input derived from gaseous fuel;

y = percent of total heat input derived from oil;

z = percent of total heat input derived from coal.

(g) Sulfur Dioxide:

1. No person shall cause, let, suffer, permit, or allow from any source the emission of sulfur dioxide (SO_2) equal to or exceeding

(i) for stack height(s) less than 90 feet — $S = 12\ F\ hs$, in pounds per hour,

(ii) for stack height(s) 90 feet or greater but less than 300 feet in height — $S = 4{,}000\ F\left(\frac{hs}{300}\right)^3$, in pounds per hour,

(iii) for stacks 300 feet or greater in height - $S = 4{,}000\ F\left(\frac{hs}{300}\right)^2$,

(iv) F = 1, for non-combustion sources of sulfur dioxide which do not have a vertical plume rise similar to a combustion source, as determined by the Division;

(v) F = 2, for combustion sources of sulfur dioxide below 10,000 million BTU's per hour heat input, and those non-conbustion sources which are determined by the Division to have similar plume rise characteristics;

(vi) F = 3, for combustion sources of sulfur dioxide with heat input of 10,000 million BTU's per hour or greater.

(vii) h_s is the stack height in feet. S is expressed in pounds per hour of sulfur dioxide from a stack. No single stack may exceed

the allowed emissions calculated using its own actual height. If two or more stacks emitting sulfur dioxide are located at the same site, then the source must comply with a site limitation for sulfur dioxide. The stack height to be used in computing the allowable sulfur dioxide from a site will be the weighted average stack height given by $h_s = \frac{h_1S_1 + h_2S_2 + \ldots h_nS_n}{S_{total}}$, where h_1 is the height of the first stack, S_1 is the sulfur dioxide emitted from the first stack, h_2 is the height of the second stack, and so forth. S_{total} is the total sulfur dioxide emission at the site.

2. New fuel-burning sources over 250 million BTU's of heat input per hour, that are constructed or extensively modified after January 1, 1972, may not emit sulfur dioxide equal to or exceeding

(i) 0.8 pounds of sulfur dioxide per million BTU's of heat input when oil is fired,

(ii) 1.2 pounds of sulfur dioxide per million BTU's heat input when coal is fired,

(iii) When different fuels are burned simultaneously in any combination, the applicable standard, expressed as pounds of sulfur dioxide per million BTU's of heat input, shall be determined by proration. Compliance shall be determined using the following formula:

$$\frac{y(0.80) + z(1.2)}{x + y + z}$$

where:

x = percent of total heat input derived from gas;

y = percent of total heat input derived from oil;

z = percent of total heat input derived from coal.

3. In addition to the stipulations and limitations in paragraphs 1. and 2. of this subsection, all fuel burning sources below 100 million BTU's of heat input per hour shall not burn fuel containing more than 2.5 percent sulfur, by weight. All fuel burning sources having a heat input of 100 million BTU's per hour or greater shall not burn a fuel containing more than 3 percent sulfur, by weight.

4. Notwithstanding the limitations on sulfur content of fuels stated in paragraph 3. above, the Director may allow sulfur content greater than that allowed in paragraph 3. above, provided that the source utilizes sulfur dioxide removal and the sulfur dioxide emission does not exceed that allowed by paragraph 3. above, utilizing no sulfur dioxide removal.

(h) Portland Cement Plants:

(iii) Visible emissions from the kiln shall not exceed No. ½ Ringelmann (10 percent opacity);

(iv) There shall be no emission equal to or greater than 10 percent opacity from all other sources within the plant.

(i) Nitric Acid Plants:

1. No person shall cause or allow the emission of nitrogen oxides (NO_x), expressed as nitrogen dioxide, from Nitric Acid Plants equal to or exceeding:

(i) for plants constructed before January 1, 1972: 25 pounds of NO_x expressed as nitrogen dioxide, per ton of 100% acid produced;

(ii) for plants constructed after January 1, 1972: 3.0 pounds of NO_x expressed as nitrogen dioxide, per ton of 100% acid produced; visible emissions shall not exceed 10% opacity;

2. No person shall operate a nitric acid plant unless the plant is equipped with a continuous NO_x monitor and recorder or an alternate system approved by the Director.

(j) Sulfuric Acid Plants:

1. No person shall cause or allow the emission of sulfur dioxide (SO_x) or acid mist from sulfuric acid plants equal to or exceeding:

(i) for plants constructed before January 1, 1972: 27 pounds of SO_2, or 0.15 pounds of acid mist per ton of 100% acid produced;

(ii) for plants constructed after January 1, 1972: 4.0 pounds of SO_2, or 0.15 pounds of acid mist per ton of 100% acid produced; visible emissions shall not exceed 10% opacity.

2. No person shall operate a sulfuric acid plant unless the plant is equipped with a continuous SO_2 monitor and recorder or an approved alternate system approved by the Director.

(l) Conical Burners:

1. New or Modified Conical Burners:

(ii) New or modified conical burners also must meet the requirements of paragraph (2) (l)2. below.

2. Existing Conical Burners:

(i) No person shall cause, let, suffer, allow, or permit emission of smoke from any conical burner in operation prior to January 1, 1972, the shade, density, or appearance of which is equal to or greater than No. 2 of the Ringelmann Smoke Chart, or equivalent opacity This shall not apply to emissions the shade of which is essentially due to water vapor.

GEORGIA

391-3-1

(s) Nitrogen Oxides

1. No person shall cause or allow from any suorce, except fuel burning equipment, the emission of nitrogen oxides (NO_x), expressed as nitrogen dioxide, equal to or exceeding:

(i) for stack height(s) less than 300 feet—

$$N = 9{,}300\left(\frac{hs}{300}\right)^3\text{, in pounds per hours;}$$

(ii) for stacks 300 feet or greater in height—

$$N = 9{,}300\left(\frac{hs}{300}\right)^2\text{, in pounds per hours;}$$

(iii) hs is the stack height in feet. If several stacks are located at a given site, then the stack height to be used above will be the weighted average stack height given by

$$h_s = \frac{h_1N_1 + h_2N_2 + \ldots h_nN_n}{N_{total}}$$

where h_1 is the height of the first stack, N_1 is the NO_x emitted from the first stack, h_2 is the height of the second stack, and so forth. N_{total} is the total NO_x emission at the site. N is expressed in pounds per hour, NO_x from a stack. No single stack may exceed the above allowed emission calculated using its own actual height.

(3) Sampling:

(a) Any sampling, computation, and analysis to determine the compliance with any of the standards set forth herein shall be by methods and procedures approved by the Director prior to sampling.

Section 8. Visible Emissions:

(a) Visible emission restrictions for existing stationary sources.

(1) No person shall cause or permit the emission of visible air pollutants of a shade or density equal to or darker than that designated as No. 2 on the Ringelmann Chart or 40 percent opacity, except as provided in Section 8(a) (2).

(2) A person may discharge into the atmosphere from any single source of emission, for a period or periods aggregating not more than 3 minutes in any 60 minutes, air pollutants of a shade or density not darker than No. 3 on the Ringelmann Chart or 60 percent opacity when building a new fire or when breakdown of equipment occurs.

(3) Sources in the City and County of Honolulu and County of Maui shall meet the requirements of Section 8(a)(1) immediately upon adoption of the regulations or in accordance with the schedule(s) established under the provisions of Section 6, Compliance Schedule. Sources on all other counties shall meet the requirements of Section 8(a)(1) on June 1, 1973.

(b) Visible emission restrictions for new stationary sources.

(1) No person shall cause or permit the emission of visible air pollutants of a shade or density equal to or darker than that designated as No. 1 on the Ringelmann Chart or20 percent opacity, except as provided in Section 8(b)(2).

(2) A person may discharge into the atmosphere from any single source of emission, for a period or periods aggregating not more than 3 minutes in any 60 minutes, air pollutants of a shade or density not darker than No. 3 on the Ringelmann Chart or 60 percent opacity when building a new fire or when breakdown of equipment occurs.

(3) The effective date shall be immediately upon adoption of the regulations.

Section 14. Sulfur Oxides from Fuel Combustion:

(a) No person shall burn, sell, or make available for sale for burning in fuel burning equipment, any fuel containing in excess of 2.0 percent sulfur by weight except for fuel used in ocean-going vessels.

(b) No person operating fossil-fuel fired power and steam generating facilities having a power generating output in excess of 25 megawatts or a heat input greater than 250 million BTU/hr. shall burn fuel containing in excess of 0.5 percent sulfur by weight.

(c) The sale and use of fuels prohibited by (a) and (b) above may be allowed when the Department has determined that the use of such other fuels will not violate the ambient air quality standards for oxides of sulfur.

IDAHO

I. Orchard heating is a recognized necessity for protection of crops from frost damage and will be permitted under the following conditions:

   3. After June 1, 1974, no orchard heating device with visible emissions exceeding No. 2 on the Ringelmann Smoke Chart at normal operating conditions shall be used.

E. REGULATION FOR CONTROL OF SMOKE AND OTHER VISIBLE EMISSIONS

SECTION 1

PURPOSE

The purpose of this regulation is to control visible emissions from all sources. Such control will alleviate many significant nuisance problems as well as help to achieve and maintain acceptable levels of ambient air quality.

SECTION 2

STANDARD FOR EXISTING SOURCES

No person shall allow the emission of any air contaminant for a period or periods aggregating more than three (3) minutes in any one hour which is:

A. Darker in shade than that designated No. 2 (40% density) on the Ringelmann Chart as published by the United States Bureau of Mines;

OR

B. Of such opacity as to obscure an observer's view to the same degree as an emission described in A above.

SECTION 3

STANDARD FOR NEW SOURCES

No person shall allow the emission of any air contaminant for a period or periods aggregating more than three (3) minutes in any one hour which is:

A. Darker in shade than that designated No. 1 (20% density) on the Ringelmann Chart as published by the United States Bureau of Mines;

OR

B. Of such opacity as to obscure an observer's view to the same degree as an emission described in A above.

IDAHO

I. REGULATION FOR SULFUR CONTENT OF FUELS

SECTION 1

PURPOSE

The purpose of this regulation is to prevent excessive ground level concentrations of sulfur dioxide from fuel burning sources in Idaho.

SECTION 3

RESIDUAL FUEL OILS

1. After January, 1973, no person shall sell, distribute, use or make available for use, any residual fuel oil containing more than 2.5% sulfur by weight.
2. After January, 1974, no person shall sell, distribute, use or make available for use, any residual fuel oil containing more than 1.75% sulfur by weight.

SECTION 4

DISTILLATE FUEL OIL

1. After January, 1973, no person shall sell, distribute, use or make available for use, any distillate fuel oil containing more than the following percentages of sulfur:
   a. ASTM Grade 1 fuel oil - 0.3 percent by weight.
   b. ASTM Grade 2 fuel oil - 0.5 percent by weight.

SECTION 5

COAL

1. After January 1, 1973, no person shall sell, distribute, use or make available for use, any coal containing greater than 1.0% sulfur by weight.

IDAHO

O. REGULATION FOR CONTROL OF KRAFT PULPING MILLS

SECTION 1

PURPOSE

The purpose of this regulation is to establish for kraft pulping mills restrictions additional to the general regulations presented in this Chapter; to formulate a schedule for compliance with the restrictions; and to formalize the policy of the Department concerning emissions control from kraft pulping mills.

C. The emission of TRS from all recovery furnace stacks shall be further reduced so as not to exceed one-half pound of sulfur per equivalent ton of air-dried kraft pulp, or from each recovery furnace stack seventeen and one-half ppm, expressed as hydrogen sulfide on a dry gas basis, whichever is the more restrictive, or such other limit of TRS that proves to be reasonably attainable utilizing the latest in design of recovery furnace equipment, controls, and procedures. Compliance shall be achieved by not later than July, 1975.

D. Non-condensibles from digesters and multiple-effect evaporators shall be treated to reduce the emission of TRS equal to the reduction achieved by thermal oxidation in a lime kiln. Compliance with this requirement shall be achieved by not later than July, 1972.

SECTION 4

MONITORING AND REPORTING

A. Every kraft mill in the State shall install equipment for the continuous monitoring of TRS.

   1. The monitoring equipment shall be capable of determining compliance with these standards and shall be capable of continuous sampling and recording of the concentrations of TRS contaminants during a time interval not greater than thirty minutes.

   2. The sources monitored shall include, but are not limited to, the recovery furnace stacks and the lime kiln stacks.

B. Each mill shall sample the recovery furnace, lime kiln, and smelt tank for particulate emissions on a regularly scheduled basis in accordance with its sampling program as approved by the Department.

C. Each mill shall submit within sixty days after effective date of this regulation a detailed monitoring program and time schedule for approval by the Department. The equipment shall be ordered within thirty days after the monitoring program has been approved in writing by the Department. The equipment shall be placed in effective operation in accordance with the approved program within ninety days after delivery.

SECTION 4

D. Unless otherwise authorized by the Department, data shall be reported by each mill at the end of each calendar month, as follows:

1. Daily average emission of TRS gases expressed in parts per million on a dry gas basis for each source included in the approved monitoring program.
2. The number of hours each day that the emission of TRS gases from each recovery furnace stack exceeds emission standards and the maximum concentration of TRS measured each day.
3. Emission of TRS gases in pounds of sulfur per equivalent air-dried ton of pulp processed in the kraft cycle on a monthly basis for each source included in the approved monitoring program.
4. Emission of particulates in pounds per equivalent air-dried ton of pulp produced in the kraft cycle based upon sampling conducted in accordance with the approved monitoring program.
5. Average daily equivalent kraft pulp production in air-dried tons.
6. Other emission data as specified in the approved monitoring program.

E. Each kraft mill shall furnish, upon request of the Department, such other pertinent data as the Department may require to evaluate the mill's emission control program. Each mill shall immediately report abnormal mill operations which result in increased emissions of air contaminants, following procedures set forth in the approved monitoring program.

P. REGULATION FOR CONTROL OF WIGWAM BURNERS

SECTION 1

PURPOSE

The purpose of this regulation is to reduce, through established design and operation criteria, the emissions of smoke and particulates from wigwam burners utilized for disposal of wood, bark, or other plant fiber.

SECTION 2

GENERAL RESTRICTIONS

No person shall allow, suffer, cause or permit the discharge of air contaminants into the outdoor atmosphere from any wigwam burner for a period or periods aggregating more than three (3) minutes in any one (1) hour which is:

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A. Darker in shade than smoke designated at #1 on the Ringelmann Smoke Chart, or

B. Of such opacity as to obscure an observer's view to a degree greater than do emissions designated as #1 on the Ringelmann Smoke Chart (when used as a measure of opacity).

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R. REGULATION FOR CONTROL OF SULFUR OXIDE EMISSIONS FROM SULFURIC ACID PLANTS

SECTION 1

PURPOSE

The purpose of this regulation is to establish sulfur oxide emission limits for sulfuric acid plants using elemental sulfur for the production of sulfuric acid.

SECTION 2

GENERAL RESTRICTIONS

A. No person shall allow, suffer, cause or permit the operation of any sulfuric acid plant which emits sulfur oxides into the atmosphere in excess of 28 lbs/ton of 100% sulfuric acid produced.

SECTION 3

MONITORING AND TESTING

A. The test methods and procedures used to determine compliance with this regulation shall be those appearing in the Department's Procedure Manual or equivalent methods approved by the Department.

S. REGULATION FOR CONTROL OF SULFUR OXIDE EMISSIONS FROM COMBINED ZINC/LEAD SMELTER OPERATIONS

SECTION 3

PERMANENT CONTROL OF SULFUR DIOXIDE EMISSIONS

A. The owner(s) or operator(s) of combined zinc/lead smelters in the Eastern Washington - Northern Idaho Interstate Air Quality Control Region shall comply with all the requirements of this Section, except as provided in Section 4 of this Regulation.

B. The owner or operator of the combined zinc/lead smelters shall not discharge or cause the discharge of SO_2 into the atmosphere in excess of 1900 pounds per hour - maximum 1 hour average. Such limitation shall apply to the sum total of SO_2 emissions from the combined zinc/lead smelter premises, but not including uncaptured fugitive emissions and those emissions due solely to use of fuel for space heating or stear generation. Compliance with this Subsection shall be achieved as expeditiously as practicable but not later than July 31, 1977.

SECTION 3-D.

d. July 31, 1975 - Limit SO_2 discharge to a maximum of 1200 tons per any consecutive 7-day period (midnight to midnight). Such limitation shall apply to the sum total of SO_2 emissions from the combined zinc/lead smelter premises, but not including uncaptured fugitive emissions and those emissions due solely to use of fuel for space heating or steam generation, as measured by the methods specified in Subsection F of this Section. The procedure used to determine the total emissions for a 7-day period shall be as defined in Section 4 (F)(1).

E The owner or operator of the combined zinc/lead smelter shall install, calibrate, maintain and operate measurement systems for continuously monitoring and recording SO_2 emission rates in each stack capable of emitting greater than 50 tons SO_2/year.

1. These measurement systems shall be demonstrated in accordance with the specification test procedures prescribed by the Director.
2. The measurement systems installed and used pursuant to this Subsection shall be maintained, operated and calibrated in accordance with the methods prescribed by the manufacturers. Records of maintenance and/or calibration shall be kept and submitted to the Director upon request. These records shall clearly show instrument readings before and after such calibration and/or maintenance.
3. The owner or operator of the combined zinc/lead smelter shall maintain a record of all measurements required by this Subsection. For each day, beginning at midnight, one hour average SO_2 emission rates shall be calculated per the method specified in Subsection F of this Section. The results of these calculations for each month shall be submitted to the Director within 15 days following the end of each month. The records of such measurements shall be retained for a minimum of two years following the date of such measurements.
4. The continuous monitoring and record keeping requirements of this Subsection shall become applicable nine months following the date of adoption of these requirements as a final Regulation by the Board of Health and Welfare.

F. Compliance with the requirements set forth in Subsection B of this Section shall be determined using the continuous measurement systems installed, calibrated, maintained and operated in accordance with the requirements of Subsection E of this Section.

1. For each stack equipped with the measurement systems required by Subsection E of this Section, one-hour average SO_2 emission rates shall be calculated as follows:

SECTION 3-F.1.

a. Determine SO_2 concentration and stack gas flow rate measurements for each one-hour period. These measurements may be obtained either by continuous integration of SO_2 concentrations and stack gas flow rate measurements recorded during the one-hour period or from the arithmetic average of any reasonable number of SO_2 concentrations and stack gas flow rate measurements. These measurements shall be taken for each one-hour period and shall be similarly spaced within each one-hour period.

b. For the one-hour period, calculate the arithmetic average SO_2 emission rate (expressed in lbs. SO_2/hour for each stack). Total the average SO_2 emission rates for all stacks.

2. A violation of the requirements of Section 3 (B) shall occur whenever the total SO_2 emission rate for a one-hour period calculated per Subsection F (1)(b) of this Section exceeds the SO_2 emission rate specified in Subsection B of this Section.

SECTION 4

ALTERNATE CONTROL OF SULFUR DIOXIDE EMISSION

A. The owner or operator of any combined zinc/lead smelters located in the Eastern Washington - Northern Idaho Interstate Air Quality Control Region may apply to the Director for approval to meet the requirements of this Section. Upon such approval, granted pursuant to Subsection C of this Section, the requirements of Section 3 shall not be applicable and all requirements of this Section shall apply during the period of such approval.

D. The owner or operator of the combined zinc/lead smelter after July 31, 1975, shall not cause or allow the discharge of gases into the atmosphere under the present stack configuration:

1. Containing in excess of 4,000 parts per million (by volume) SO_2 from the lead plant acid plant - maximum 8-hour average.

2. Containing in excess of 4,000 parts per million (by volume) SO_2 from each of the zinc plant stacks - maximum 8-hour average.

3. Containing in excess of 100 tons SO_2 per 24-hours from the lead plant main stack.

4. At a rate greater than 1,200 tons SO_2 per consecutive 7-day period (midnight to midnight) (collectively from all sources within the lead/zinc complex, but not including uncaptured fugitive emissions and those emissions due solely to use of fuel for space heating or steam generation).

The limits of Subsection 4 (D)(3) may be changed in accordance with new stack configurations.

E. Compliance with the requirements set forth in Subsection D (1), D (2) and D (3) of this Section shall be determined using the continuous measurement systems installed, calibrated, maintained and operated in accordance with the requirements of Subsection G of this Section, or by Reich Tests taken hourly on the acid plant stacks until continuous monitors are installed.

1. Eight-hour average concentrations of SO_2 shall be calculated for each stack listed under D(1), (2) and (3), of this Section. This measurement may be obtained either by continuous integration of all measurements recorded during the eight-hour period or from the arithmetic average of any reasonable number of concentration readings equally spaced over the eight-hours. In the latter case, the same number of concentration readings shall be taken for each eight-hour period and shall be similarly spaced within each eight-hour period.

2. A violation of the requirements of Subsection D(1) and D(2) of this Section shall occur whenever the arithmetic average concentration for an eight-hour period calculated per Subsection E(1) for any stack exceeds the SO_2 concentrations specified in Subsection D(1) and D(2), of this Section, respectively.

F. Compliance with the requirements set forth in Subsection D(3) and D(4) of this Section shall be determined using the continuous measurement systems installed, calibrated, maintained and operated in accordance with the requirements of Subsection G of this Section or by Reich Tests taken hourly on the acid plant stacks until continuous monitors are installed.

1. The average SO_2 emission rate for any one-day period shall be calculated as follows:

   a. Determine a SO_2 concentration as set forth in Subsection E of this Section for each eight-hour period. The stack gas flow rate measurements may be obtained either by continuous integration of the stack gas flow rate measurements recorded during the eight-hour period or from the arithmetic average of any reasonable number of stack gas flow rate readings equally spaced over the eight hours. In the latter case, the same number of SO_2 concentration and stack gas flow rate measurements shall be taken for each eight-hour period and shall be similarly spaced within each eight-hour period.

b. For the eight-hour period, calculate the arithmetic average SO_2 emission rate (expressed in lbs. SO_2/hour) for each stack. In the case of D(4) of this Section, total the average SO_2 emission rates for all stacks for the eight-hour period.

c. Calculate the average daily SO_2 emission rate (midnight to midnight) by summing the average SO_2 emission rate for each eight-hour period calculated per Subsection F(1)(b) of this Section. In the case of D(4) of this Section, add the predetermined constant for all sources under 50 tons of SO_2 per year as calculated per Subsection G of this Section.

2. A violation of the requirements of Subsection D(3) shall occur whenever the total SO_2 emission rate for any one-day period (midnight to midnight) calculated per Subsection F(1)(c) of this Section exceeds the SO_2 emission rate specified in Subsection D(3) of this Section.

3. A violation of the requirements of Subsection D(4) of this Section shall occur whenever the total SO_2 emission rate for any consecutive 7-day period (midnight to midnight) calculated per Subsection F(1)(c) of this Section exceeds the SO_2 emission rate specified in Subsection D(4) of this Section.

G. The owner or operator of the combined zinc/lead smelter shall install, calibrate, maintain and operate measurement systems for continuously monitoring and recording SO_2 emission concentrations or emission rates in each stack capable of emitting greater than 50 tons SO_2/year. Stack tests of sources less than 50 tons/year shall be conducted quarterly with the determined emission rate to be used as a fixed emission rate for that quarter.

1. These measurement systems shall be demonstrated in accordance with the test procedures prescribed by the Director.

2. The measurement systems installed and used pursuant to this subsection shall be maintained, operated and calibrated in accordance with the methods prescribed by the manufacturers. Records of maintenance and/or calibration shall be kept and submitted to the Director upon request. These records shall clearly show instrument readings before and after such calibration and/or maintenance.

3. The owner or operator of the combined zinc/lead smelter shall maintain a record of all measurements required by this Subsection for each eight-hour period of each day (midnight to 8:00 a.m., 8:00 a.m. to 4:00 p.m., 4:00 p.m. to midnight). Measurement results shall be expressed in the units prescribed by each emission limitation in Subsection D of this Section. The results shall be summarized monthly for each hour and shall be submitted to the Director within 15 days after the end of each month beginning September 15, 1975. A record of such measurements shall be retained for two years following the date of such measurements.

SECTION 4-G.

4. The continuous monitoring requirements of this Subsection shall become applicable July 31, 1975, unless the source is to be vented to another stack before July 31, 1977.

~~U. REGULATION OF STANDARDS OF PERFORMANCE FOR NEW STATIONARY SOURCES.~~

~~SECTION 1~~

~~PURPOSE~~

~~The purpose of this Regulation is to establish standards of performance for new stationary sources which reflect the greatest degree of emission reduction that has been adequately demonstrated.~~

~~B. PERFORMANCE TESTS~~

1. ~~Performance tests shall be conducted in accordance with the time limitations of Regulation A of these Regulations. Such tests shall be conducted according to the procedures set forth in Part 60 of Chapter I, Title 40, Code of Federal Regulations unless other sampling procedures are approved or required by the Department.~~

~~C. MONITORING AND RECORD KEEPING REQUIREMENTS~~

1. ~~Owners or operators of any facility subject to the provision of this Regulation shall maintain files of all measurements and records necessary to determine the compliance status of the source or to determine or estimate the emission rate of the source. Such records shall be reduced to the units of the standard where applicable, shall be summarized monthly, shall be maintained for a period of at least two years, and shall be made available to the Department on request. The records may include, but are not limited to, the following:~~

   a. ~~production rates~~
   b. ~~raw material feed rates~~
   c. ~~fuel use rate~~
   d. ~~fuel analyses for sulfur, ash, and heat content~~
   e. ~~hours of operation~~
   f. ~~emission measurements~~

2. ~~The instruments and sampling system installed pursuant to this Regulation for continuously sampling and recording contaminants shall be capable of monitoring emission levels within ± 20 percent with a confidence level of 95 percent when compared to the test procedures referenced in Subsection B(1) of this Section, unless other specifications are approved by the Department. Such instruments shall be calibrated and zero-adjusted according to the procedures specified by the manufacturer. These adjustments shall be made daily or at the frequency specified by the manufacturer, whichever is more frequent. Where monitoring instruments which comply with the provisions of this Subsection are not available, the Director may approve other performance specifications and/or zero-adjustment and calibration frequencies.~~

RULE 202

(a) **Visual Emission Standards and Limitations for Certain New Emission Sources.**

(1) **New Fuel Combustion Emission Sources with Actual Heat Input Greater than 250 Million BTU per Hour.** No person shall cause or allow the emission of smoke or other particulate matter into the atmosphere from any new fuel combustion emission source with actual heat input greater than 250 million btu per hour, having an opacity greater than 20 per cent.

Exception: The emissions of smoke or other particulate matter from any such emission source may have an opacity greater than 20 per cent but not greater than 40 per cent for a period or periods aggregating 3 minutes in any 60 minute period, providing that such more opaque emission permitted during any 60 minute period shall occur from only one such emission source located within a 1,000 foot radius from the center point of any other such emission source owned or operated by such person, and provided further that such more opaque emissions permitted from each such fuel combustion emission source shall be limited to 3 times in any 24 hour period.

(2) **New Portland Cement Processes.** No person shall cause or allow the emission of smoke or other particulate matter from any new portland cement process into the atmosphere having an opacity greater than 10 per cent.

(b) **Visual Emission Standards and Limitations for All Other Emission Sources.**

No person shall cause or allow the emission of smoke or other particulate matter from any other emission source into the atmosphere of an opacity greater than 30 per cent.

Exception: The emission of smoke or other particulate matter from any such emission source may have an opacity greater than 30 per cent but not greater than 60 per cent for a period or periods aggregating 8 minutes in any 60 minute period provided that such more opaque emissions permitted during any 60 minute period shall occur from only one such emission source located within a 1,000 foot radius from the center point of any other such emission source owned or operated by such person, and provided further that such more opaque emissions permitted from each such emission source shall be limited to 3 times in any 24 hour period.

(c) **Exceptions to Rules 202(a) and 202(b).**

(1) **Startup.**

Rules 202(a) and 202(b) shall apply during times of startup except as provided in the Operating Permit in Rules 103 and 105.

(2) **Emissions of Water and Water Vapor.**

Rules 202(a) and 202(b) shall not apply to emissions of water or water vapor from an emission source.

(3) **Compliance with Rule 203 a Defense.**

Rules 202(a) and 202(b) shall not apply if it is shown that the emission source was, at the time of such emission, in compliance with the applicable mass emission limitations of Rule 203.

(d) **Determination of Violations of Rule 202.**

Violations of Rule 202(a) and 202(b) shall be determined:

(1) by visual observations; or

(2) by the use of a calibrated smoke evaluation device approved by the Agency as specified in Rule 106 of Part I of this Chapter; or

(3) by the use of a smoke monitor located in the stack and approved by the Agency as specified in Rule 106 of Part I of this Chapter.

RULE 202

(e) Compliance Dates.

(1) Every owner or operator of a new emission source shall comply with the emission standards and limitations of this Rule 202 on the effective date of Part 2 of this Chapter.

(2) Every owner or operator of an existing emission source shall comply with the emission standards and limitations of this Rule 202 by December 31, 1972; except that every owner or operator of an emission source subject to paragraph (g) of Rule 203, shall comply with the emission standards and limitations of this Rule 202 by May 30, 1975.

RULE 203

(B) By-Product Coke Plants.

(i) Charging.

(aa) Sixty (60) days after the effective date of Part 2 of this Chapter and until December 31, 1973, no person shall cause or allow the emission of smoke or other particulate matter from any coke oven charging port into the atmosphere after withdrawal of the charging sleeve, except for a period or periods aggregating 20 seconds during any one coke oven charging operation. The charge car shall remain over the charging ports only as long as is needed to complete the charging operation.

(bb) On and after December 31, 1973, all coke oven facilities shall be equipped with automated, negative pressure charging systems, or shall employ alternative methods of comparable effectiveness in reducing emissions during charging; and after said date, no person shall cause or allow the emission of visible particulate matter, other than water, from any coke oven charging port into the atmosphere, except for a period or periods aggregating 15 seconds during any one coke oven charging operation. During such charging operation the emission of smoke or other particulate matter from the charging port or from the charging system into the atmosphere shall have an opacity of no greater than 30 per cent.

(ii) Pushing and Quenching.

(aa) On and after July 1, 1972, no person shall cause or allow the emission of smoke or other particulate matter, other than water, of an opacity greater than 30 per cent, from a coke manufacturing process quench tower into the atmosphere.

(bb) On and after December 31, 1974, all coke oven facilities shall be equipped with enclosed pushing and quenching systems with particulate collection equipment, or shall employ alternative methods of comparable effectiveness in reducing emission during pushing and quenching.

(iii) **Work Rules.** No person shall cause or allow the operation of a by-product coke plant without operating and maintenance work rules approved by the Agency. Such work rules shall be submitted to and approved by the Agency no later than 60 days after the effective date of Part 2 of this Chapter. No such plan shall be approved by the Agency unless it contains, as a minimum, information sufficient to prove to the Agency that the emission of specified air contaminants will conform to the requirement of this Rule 203.

(iv) **Coke Oven Doors.**

(aa) On and after July 1, 1972, no person shall cause or allow the operation of a coke oven that emits any specified air contaminants into the atmosphere during coking from the coke oven doors for more than ten minutes after commencement of the coking cycle. During such ten minutes the emission shall have an opacity no greater than 30 per cent.

(bb) On and after July 1, 1972, no person shall cause or allow the operation of a coke oven unless:

(bb-1)
there is, on the plant premises an inventory of spare coke oven doors and seals at all times, and

(bb-2)
there is, on the plant premises, a repair facility capable of prompt and efficient repair of coke oven doors and seals.

(9) **Grain-Handling and Grain-Drying Operations.**

Rules 203(a), 203(b), 203(c), and 203(f)(2) shall not apply to grain-handling and grain-drying operations, portable grain-handling facilities, and one-turn storage space.

(A) All grain-handling and grain-drying operations, regardless of size, must implement and use the following Housekeeping Practices:

(i) Air Pollution Control devices shall be checked daily and cleaned as necessary to insure proper operation.

(ii) **Cleaning and Maintenance**

(a) Floors shall be kept swept and cleaned from boot pit to cupola floor. Roof or bin decks and other exposed flat surfaces shall be kept clean of grain and dust that would tend to rot or become airborne.

(b) Cleaning shall be handled in such a manner as not to permit dust to escape to the atmosphere.

(c) The yard and surrounding open area, including but not limited to ditches and curbs, shall be cleaned to prevent the accumulation of rotting grain.

(iii) **Dump Pit**

(a) Aspiration equipment shall be maintained and operated.

(b) Dust control devices shall be maintained and operated.

(iv) **Head House**

The head house shall be maintained in such a fashion that visible quantities of dust or dirt are not allowed to escape to the atmosphere.

(v) **Property**

The yard and driveway of any facility shall be asphalted, oiled, or equivalently treated to control dust.

(vi) **Housekeeping Check List**

Housekeeping check lists to be developed by the Agency shall be completed by the manager and maintained on the premises for inspection by Agency personnel.

(B) Unless otherwise exempted pursuant to Rules 203(d)(9)(D) or Rule 203(d)(9)(E), or allowed to use alternate control according to Rule 203(d)(9)(K), existing grain-handling operations with a total annual grain through-put of 300,000 bushels or more shall apply for an operating permit pursuant to Rule 103 of Part I, and shall demonstrate compliance with the following:

(i) **Cleaning and Separating Operations**

(a) Particulate matter generated during cleaning and separating operations shall be captured to the extent necessary to prevent visible particulate matter emissions directly into the atmosphere.

(b) For grain-handling facilities having a grain through-put of not more than 2 million bushels per year or located outside a major population area, air contaminants collected from cleaning and separating operations shall be conveyed through air pollution control equipment which has a rated and actual particulate removal efficiency of not less than 90% by weight prior to release into the atmosphere.

(c) For grain-handling facilities having a grain through-put exceeding 2 million bushels per year and located within a major population area, air contaminants collected from cleaning and separating operations shall be conveyed through air pollution control equipment which has a rated and actual particulate removal efficiency of not less than 98% by weight prior to release into the atmosphere.

(iii) **Internal Transferring Area**

(a) Internal transferring area shall be enclosed to the extent necessary to prohibit visible particulate matter emissions directly into the atmosphere.

(b) Air contaminants collected from internal transfer operations for grain-handling facilities having a grain through-put of not more than 2 million bushels per year or located outside a major population area shall be conveyed through air pollution control equipment which has a rated and actual particulate removal efficiency of not less than 90% by weight prior to release into the atmosphere.

(c) Air contaminants collected from internal transfer operations for grain-handling facilities having a grain through-put exceeding 2 million bushels per year and located in a major population area shall be conveyed through air pollution control equipment which has a rated and actual particulate removal efficiency of not less than 98% by weight prior to release into the atmosphere.

Rule 204: **Sulfur Standards and Limitations.**

(a) **Sulfur Dioxide Emission Standards and Limitations for New Fuel Combustion Emission Sources with Actual Heat Input Greater than 250 Million BTU per Hour.**

(1) **Solid Fuel Burned Exclusively.*** No person shall cause or allow the emission of sulfur dioxide into the atmosphere in any one hour period from any new fuel combustion emission source greater than 250 million btu per hour, burning solid fuel exclusively, to exceed 1.2 pounds of sulfur dioxide per million btu of actual heat input.

* See Illinois Supreme Court Decision, Commonwealth Edison Company v. Pollution Control Board, Docket Number 47352, (January 20, 1976)

(2) **Liquid Fuel Burned Exclusively.** No person shall cause or allow the emission of sulfur dioxide into the atmosphere in any one hour period from any new fuel combustion emission source greater than 250 million btu per hour, burning liquid fuel exclusively;

(A) to exceed 0.8 pounds of sulfur dioxide per million btu of actual heat input when residual fuel oil is burned; and

(B) to exceed 0.3 pounds of sulfur dioxide per million btu of actual heat input when distillate fuel oil is burned.

(b) **Sulfur Dioxide Emission Standards and Limitations for New Fuel Combustion Emission Sources with Actual Heat Input Smaller than, or Equal to, 250 Million BTU per Hour.**

(1) **Solid Fuel Burned Exclusively.** No person shall cause or allow the emission of sulfur dioxide into the atmosphere in any one hour period from any new fuel combustion source with actual heat input smaller than, or equal to, 250 million btu per hour, burning solid fuel exclusively, to exceed 1.8 pounds of sulfur dioxide per million btu of actual heat input.

(2) **Liquid Fuel Burned Exclusively.** No person shall cause or allow the emission of sulfur dioxide into the atmosphere in any one hour period from any new fuel combustion source with actual heat input smaller than, or equal to, 250 million btu per hour, burning liquid fuel exclusively;

(A) to exceed 1.0 pounds of sulfur dioxide per million btu of actual heat input when residual fuel oil is burned; and

(B) to exceed 0.3 pounds of sulfur dioxide per million btu of actual heat input when distillate fuel oil is burned.

(c) **Sulfur Dioxide Emission for Existing Fuel Combustion Sources.**

(1) **Solid Fuel Burned Exclusively.**

(A) **Existing Fuel Combustion Sources Located in the Chicago, St. Louis (Illinois) and Peoria Major Metropolitan Areas.*** No person shall cause or allow the emission of sulfur dioxide into the atmosphere in any one hour period from any existing fuel combustion source, burning solid fuel exclusively, located in the Chicago, St. Louis (Illinois) and Peoria major metropolitan areas, to exceed 1.8 pounds of sulfur dioxide per million btu of actual heat input, on or after May 30, 1975.

* See Illinois Supreme Court Decision, Commonwealth Edison Company v. Pollution Control Board, Docket No 47352, (January 20, 1976)

(B) **Existing Fuel Combustion Sources Located Outside the Chicago, St. Louis (Illinois) and Peoria Major Metropolitan Areas.** No person shall cause or allow the emission of sulfur dioxide into the atmosphere in any one hour period from any existing fuel combustion source, burning solid fuel exclusively, located outside the Chicago, St. Louis (Illinois) and Peoria major metropolitan areas, to exceed the following:

(i) 6.0 pounds of sulfur dioxide per million btu of actual heat input, on and after May 30, 1975; and

(ii) 1.8 pounds of sulfur dioxide per million btu of actual heat input for all such fuel combustion emission sources located within any MMA other than Chicago, Peoria, and St. Louis (Illinois) which, according to any one ambient air monitoring station operated by or under supervision and control of the Agency within such MMA, has an annual arithmetic average sulfur dioxide level greater than;

60 ug/m^3 (0.02 ppm) for any year ending prior to May 30, 1976, or

45 ug/m^3 (0.015 ppm) for any year ending on or after May 30, 1976.

Compliance with this paragraph (ii) of Rule 204(c)(1)(B) shall be on and after three years from the date upon which the Board promulgates an Order for Compliance.

Before promulgation of such Order for Compliance, the Board shall:

(aa) publish in the Board Newsletter, within 21 days of receipt from the Agency, a proposed Order for Compliance along with the data used to obtain said annual arithmetic average sulfur dioxide level; and,

(bb) serve a copy of such proposed Order and supporting data, within 21 days of receipt from the Agency, upon the owner or operator of each such emission source located within the MMA; and,

(cc) defer promulgation of the Order for Compliance for at least 45 days from the date of publication to allow submission and consideration of additional written comments.

(2) **Liquid Fuel Burned Exclusively.** No person shall cause or allow the emission of sulfur dioxide into the atmosphere in any one hour period from any existing fuel combustion emission source, burning liquid fuel exclusively;

(A) to exceed 1.0 pounds of sulfur dioxide per million btu of actual heat input when residual fuel oil is burned; and,

(B) to exceed 0.3 pounds of sulfur dioxide per million btu of actual heat input when distillate fuel oil is burned.

(d) **Combination of Fuels.** No person shall cause or allow the emission of sulfur dioxide into the atmosphere in any one hour period from any fuel combustion emission source burning simultaneously any combination of solid, liquid and gaseous fuels to exceed the allowable emission rate determined by the following equation:

$$E = S_sH_s + 0.3\ H_d + S_RH_R$$

where:

E = allowable sulfur dioxide emission rate, in pounds per hour,

S_s = solid fuel sulfur dioxide emission standard, in pounds per million btu, which is applicable,

S_R = residual fuel oil sulfur dioxide emission standard, in pounds per million btu, which is applicable,

H_s = actual heat input from solid fuel, in million btu per hour,

H_R = actual heat input from residual fuel oil, in million btu per hour,

H_d = actual heat input from distillate fuel oil, in million btu per hour,

and where that portion of the actual heat input that is derived:

(1) from the burning of gaseous fuels produced by the gasification of solid fuels shall be included in H_s;

(2) from the burning of gaseous fuels produced by the gasification of distillate fuel oil shall be included in H_d;

(3) from the burning of gaseous fuels produced by the gasification of residual fuel oil shall be included in H_R;

(4) from the burning of gaseous fuels produced by the gasification of any other liquid fuel shall be included in H_R; and,

(5) from the burning of by-product gases such as those produced from a blast furnace or a catalyst regeneration unit in a petroleum refinery shall be included in H_R.

(e) **Combination of Fuel Combustion Emission Sources.** No person shall cause or allow the total emissions of sulfur dioxide into the atmosphere in any one hour from all fuel combustion emission sources owned or operated by such person and located within a 1 mile radius from the center point of any such fuel combustion emission source to exceed the emissions determined by the following equations:

$$E = 20{,}000\left(\frac{H_S}{300}\right)^2$$

$$H_s = \frac{P_1H_1 + P_2H_2 + \ldots P_nH_n}{100}$$

(Note: $P_1 + P_2 + \ldots + P_n = 100$)

where:

E = total emission of sulfur dioxide, in pounds per hour, into the atmosphere in any one hour period from all fuel combustion emission sources owned or operated by such person and located within a 1 mile radius from the center point of any such emission source,

$P_i, i = 1, 2, \ldots, n$ = percentage of total emissions E emitted from source i. and

$H_i, i = 1, 2, \ldots, n$ = physical height in feet above grade of stack i.

ILLINOIS

RULE 204

(f) **Sulfur Standards and Limitations for Process Emission Sources.**

(1) **Sulfur Dioxide Standards and Limitations.**

(A) Except as further provided by paragraphs (f)(1)(B); (f)(1)(C), (f)(1)(D) and (f)(1)(E) of this Rule 204, no person shall cause or allow the emission of sulfur dioxide into the atmosphere from any process emission source to exceed 2000 ppm. . . .

(B) Paragraph (f)(1)(A) of this Rule 204 shall not apply to new sulfuric acid manufacturing processes. No person shall cause or allow the emission of sulfur dioxide into the atmosphere from any new sulfuric acid manufacturing plant to exceed 4.0 pounds of sulfur dioxide per ton of acid produced.

(C) Paragraph (f)(1)(A) of this Rule 204 shall not apply to processes designed to remove sulfur compounds from the flue gases of fuel combustion emission sources.

(D) Paragraph (f)(1)(A) of this Rule 204 shall not apply to existing processes designed to remove sulfur compounds from the flue gases of petroleum and petrochemical processes, providing that the sulfur dioxide emissions from such removal processes do not exceed the emissions determined by the equations of Rule 204(e).

(E) Paragraph (f)(1)(A) of this Rule 204 shall not apply to existing hydrogen sulfide flares at a chemical manufacturing plant provided:

(i) Said flares are operative on existing batch type processes; and

(ii) The hydrogen sulfide emissions being flared are not, at the time of adoption of this subpart (E), passed through existing processes designed to remove sulfur compounds from the flue gasses as provided in subparagraph (D) above; and

(iii) The emission of sulfur dioxide into the atmosphere from said flares does not exceed 500 pounds per hour and 3500 pounds per eight-hour period; and

(iv) provided, however, that if emission controls for said flares become economically reasonable and technically feasible the owner/operator of such hydrogen sulfide flares shall install such controls.

(2) **Sulfuric Acid Mist Standards and Limitations.**

(A) No person shall cause or allow the emission of sulfuric acid mist into the atmosphere from any process emission source to exceed 0.15 pounds of acid mist per ton of acid manufactured.

(B) With the exception of Rule 205(f)(2)(A) and fuel combustion sources, no person using sulfuric acid shall cause or allow the emission of sulfuric acid and/or sulfur trioxide from all other similar emission sources at a plant or premises to exceed:

(i) 0.10 pound in any one hour period for sulfuric acid usage less than 1,300 tons per year (100 percent acid basis);

(ii) 0.50 pound per ton of acid used for sulfuric acid usage greater than or equal to 1,300 tons per year (100 percent acid basis).

(g) **Measurement Methods.**

(1) **Sulfur Dioxide Measurement.**

Measurement of sulfur dioxide emissions from stationary sources shall be made according to the procedure published in 36 Fed. Reg. 24890, Method 6, or by measurement procedures specified by the Agency according to the provisions of Part 1 of this Chapter and application of standard emission factors as published in Public Health Service Publication 999-AP-42, Compilation of Air Pollutant Emission Factors, as revised from time to time.

(2) **Sulfuric Acid Mist and Sulfur Trioxide Measurement.**

Measurement of sulfuric acid mist and sulfur trioxide shall be according to the Barium-thorin titration method as published in 36 Fed. Reg. 24893.

(3) **Solid Fuel Averaging Measurement.**

If low sulfur solid fuel is used to comply with subparagraphs (a), (b), (c), and (d) of this Rule 204, the applicable solid fuel sulfur dioxide standard shall be met by a two month average of daily samples with 95 per cent of the samples being no greater than 20 per cent above the average. A.S.T.M. procedures shall be used for solid fuel sampling, sulfur and heating value determinations.

(h) Compliance Dates.

(1) Every owner or operator of a new emission source shall comply with the standards and limitations of Rule 204 by the effective date of Part 2 of this Chapter.

(2) Every owner or operator of an existing fuel combustion emission source shall comply with the standards and limitations of Rules 204(c)(1)(A), 204(c)(2), 204(d) and 204(e) by May 30, 1975.

(3) Every owner or operator of an existing process emission source shall comply with the standards and limitations of Rule 204(f) by December 31, 1973.

Rule 207: **Nitrogen Oxides Emission Standards and Limitations.**

(a) **New Fuel Combustion Emission Sources.** No person shall cause or allow the emission of nitrogen oxides into the atmosphere in any one hour period from any new fuel-combustion emission source with an actual heat input equal to or greater than 250 million btu per hour to exceed the following standards and limitations:

(1) for gaseous fossil fuel firing, 0.20 pounds per million btu of actual heat input;

(2) for liquid fossil fuel firing, 0.30 pounds per million btu of actual heat input;

(3) for dual gaseous and liquid fossil fuel firing, 0.30 pounds per million btu of actual heat input;

(4) for solid fossil fuel firing, 0.7 pounds per million btu of actual heat input; and,

(5) for fuel combustion emission sources burning simultaneously any combination of solid, liquid and gaseous fossil fuels an allowable emission rate shall be determined by the following equation:

$$E = \left(\frac{0.3\,(P_g + P_l) + 0.7\,(P_s)}{P_g + P_l + P_s} \right) Q$$

where:

E = allowable nitrogen oxides emission rate in pounds per hour,

P_g = per cent of actual heat input derived from gaseous fossil fuel,

P_i = per cent of actual heat input derived from liquid fossil fuel,

P_s = per cent of actual heat input derived from solid fossil fuel, and

Q = actual heat input derived from all fossil fuels in million btu per hour.

Note: $P_i + P_s + P_g = 100.0$

(b) **Existing Fuel-Combustion Emission Sources in the Chicago and St. Louis MMA.** No person shall cause or allow the emission of nitrogen oxides into the atmosphere in any one hour period from any existing fuel-combustion emission source with an actual heat input equal to or greater than 250 million btu per hour, located in the Chicago and St. Louis (Illinois) major metropolitan areas to exceed the following limitations:

(1) for gaseous and/or liquid fossil fuel firing, 0.3 pounds per million btu of actual heat input;

(2) for solid fossil fuel firing, 0.9 pounds per million btu of actual heat input;

(3) for fuel combustion emission sources burning simultaneously any combination of solid, liquid and gaseous fuel the allowable emission rate shall be determined by the following equation:

$$E = \left(\frac{0.3\,(P_g + P_i) + 0.9\,(P_s)}{P_g + P_i + P_s} \right) Q$$

E = allowable nitrogen oxides emission in pounds per hour,

P_g = per cent of actual heat input derived from gaseous fossil fuel,

P_i = per cent of actual heat input derived from liquid fossil fuel,

P_s = per cent of actual heat input derived from solid fossil fuel, and

Q = actual heat input derived from all fossil fuels in million btu per hour.

Note: $P_i + P_s + P_g = 100.0$

(c) **Exceptions to Rule 207(b).** Paragraph (b) of this Rule 207 shall not apply to existing fuel combustion sources which are either cyclone fired boilers burning solid or liquid fuel, or horizontally opposed fired boilers burning solid fuel.

(d) **Nitric Acid Manufacturing Processes.**

(1) **New Weak Nitric Acid Processes.** No person shall cause or allow the emission of nitrogen oxides into the atmosphere from any new weak nitric acid manufacturing process to exceed the following standards and limitations:

(A) 3.0 pounds of nitrogen oxides (expressed as NO_2) per ton of acid produced (100 per cent acid basis);

(B) visible emissions in excess of 5 per cent opacity;

(C) 0.1 pounds of nitrogen oxides (expressed as NO_2) per ton of acid produced (100 per cent acid basis) from any acid storage tank vents.

(2) **Existing Weak Nitric Acid Processes.** No person shall cause or allow the emission of nitrogen oxides into the atmosphere from any existing weak nitric acid manufacturing process to exceed the following standards and limitations:

(A) 5.5 pounds of nitrogen oxides (expressed as NO_2) per ton of acid produced (100 per cent acid basis);

(B) visible emissions in excess of 5 per cent opacity;

(C) 0.2 pounds of nitrogen oxides (expressed as NO_2) per ton of acid produced (100 per cent acid basis) from any acid storage tank vents.

(3) **Concentrated Nitric Acid Processes.** No person shall cause or allow the emission of nitrogen oxides into the atmosphere from any concentrated nitric acid manufacturing process to exceed the following standards and limitations:

(A) 3.0 pounds of nitrogen oxides (expressed as NO_2) per ton of acid produced (100 per cent acid basis);

(B) 225 ppm of nitrogen oxides (expressed as NO_2) in any effluent gas stream emitted into the atmosphere;

(C) visible emissions in excess of 5 per cent opacity.

(4) **Nitric Acid Concentrating Processes.** No person shall cause or allow the emission of nitrogen oxides into the atmosphere from any nitric acid concentrating process to exceed the following limitations:

(A) 3.0 pounds of nitrogen oxides (expressed ~~as~~ NO_2) per ton of acid produced (100 per cent acid basis);

(B) visible emissions in excess of 5 per cent opacity.

(e) **Industrial Processes: General**

(1) **New Industrial Processes.** No person shall cause or allow the emission of nitrogen oxides into the atmosphere from any new process producing products of organic nitrations and/or oxidations using nitric acid to exceed the following standards and limitations:

(A) 5.0 pounds of nitrogen oxides (expressed as NO_2) per ton of nitric acid (100 per cent acid basis) used in such new process.

(B) visible emissions in excess of 5 per cent opacity.

RULE 207(e)

(2) **Existing Industrial Processes.** No person shall cause or allow the emission of nitrogen oxides into the atmosphere from any existing process producing products of organic nitrations and/or oxidations using nitric acid to exceed 10.0 pounds of nitrogen oxides (expressed as NO_2) per ton of nitric acid (100 per cent acid basis) used in such process.

(3) **Exemption.** Paragraphs (e)(1) and (e)(2) of this Rule 207 shall not apply to any industrial process using less than 100 tons of nitric acid (100 per cent acid basis) annually or which produces less than 1 ton of nitrogen oxides (expressed as NO_2) per year.

(f) **Measurement Method.** Measurement of nitrogen oxides shall be according to the Phenol Disulfonic Acid Method as published in 36 Fed. Reg. 15718, Method 7.

(g) **Compliance Dates.**

(1) Every owner or operator of a new emission source shall comply with the standards and limitations of Rule 207 by the effective date of Part 2 of this Chapter.

(2) Except as otherwise provided in paragraph (g)(3) of this Rule 207, every owner or operator of an existing emission source shall comply with the standards and limitations of Rule 207 by December 31, 1973.

(3) Every owner or operator of an existing coal fired fuel combustion emission source shall comply with the applicable standards and limitations of Rule 207 by May 30, 1975.

Rule 208: Compliance Dates.

Notwithstanding the issuance of an Operating Permit, no person shall cause or allow the operation of an emission source which is not in compliance with the standards and limitations set forth in this Part 2 after December 31, 1973, unless otherwise provided by a compliance date specifically set forth for a particular category of emission source in this Part 2.

Sec. 1. Limitation. No person shall operate any equipment so as to produce, cause, suffer, or allow smoke or other visible emissions in excess of 40 per-cent opacity (Ringelmann No. 2) for more than a cumulative total of fifteen minutes in a 24-hour period except as allowed in Sec. 2 and Sec. 4. Opacity values shall not be considered valid, unless observed and determined by a qualified person. Visible emissions shall exclude uncombined water.

Sec. 2. Temporary Exceptions from Compliance

(a) Fire Starting. When building a new fire in a boiler, smoke no darker than 60 percent opacity may be emitted for a period not to exceed ten minutes on one occasion in any 24-hour period.

(b) Boilers. When cleaning a fire in a boiler or blowing tubes, smoke which is not darker than 60 percent opacity may be emitted for periods not exceeding five minutes in any 60-minute period. Such emissions shall not be permitted on more than six occasions during any 24-hour period.

Sec. 5. Federal New Source Performance Standards. In addition to the requirements set forth herein, all new sources for which federal standards have been promulgated shall comply with the applicable portions of the Federal New Source Performance Standards 40 CFR Part 60.

Air Pollution Control Board of the State of Indiana

Regulation APC 8

A Regulation requiring continuous monitoring of emissions of certain selected facilities, pursuant to the authority found in IC 1971, 13-1-1, and IC 1971, 13-7-4.

Section 1 Applicability

Sources in the following categories shall continuously monitor and record emissions of air pollutants according to Appendix I of this regulation.

(a) Fossil fuel-fired steam generators of greater than 250 million Btu per hour heat input capacity.

(b) Nitric acid plants of greater than 300 tons per day production capacity, the production capacity being expressed at 100% acid.

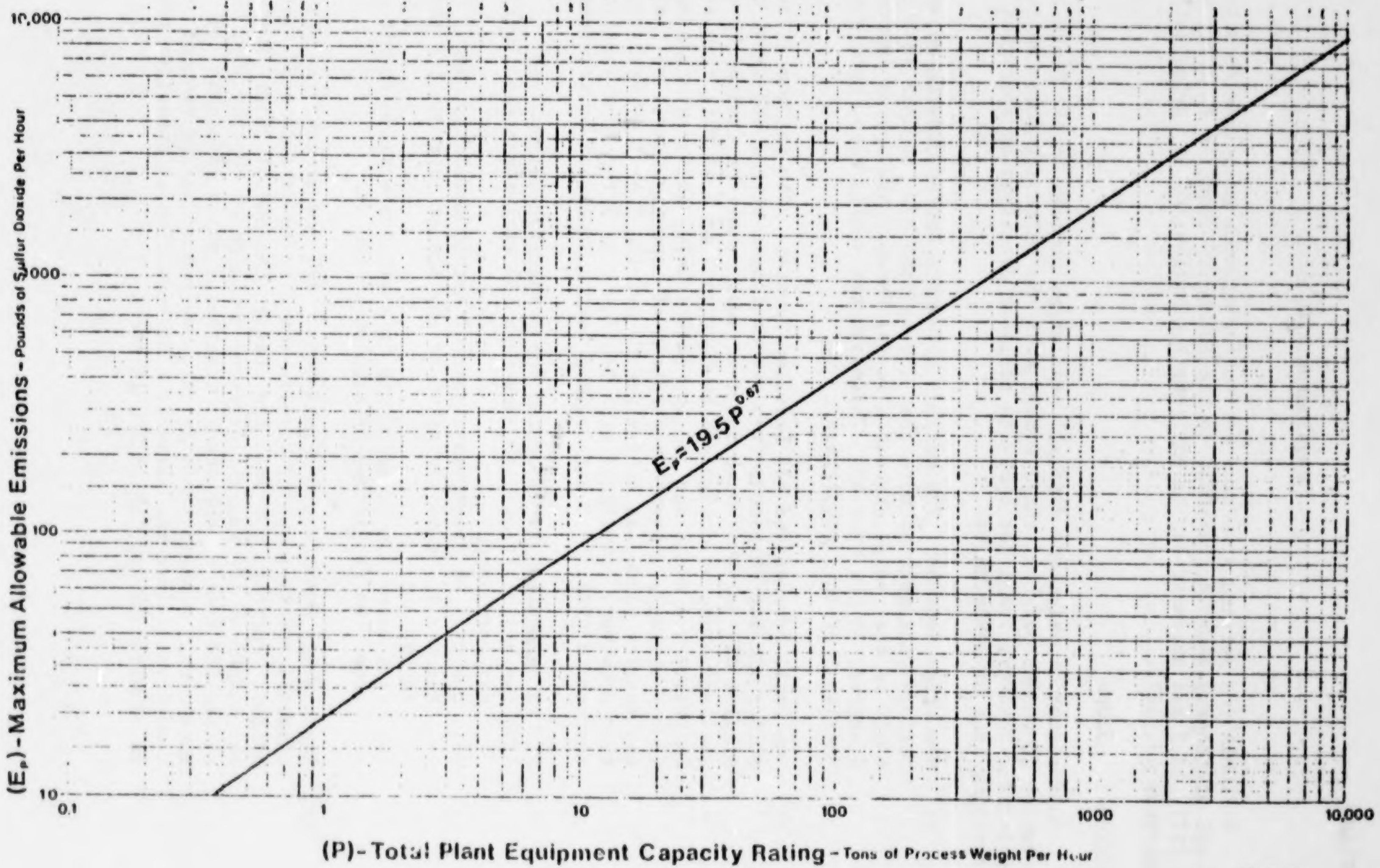
(c) Sulfuric acid plants of greater than 300 tons per day production capacity, the production capacity being expressed as 100% acid.

(d) Petroleum refinery catalyst regenerators for fluid bed catalytic cracking units of greater than 20,000 barrels (840,000 gallons) per day fresh feed capacity.

Section 2 Compliance

All sources must be in compliance with this regulation by July 1, 1978.

Allowable Sulfur Dioxide Emissions for Process Operations
(Non-Combustion Processes)



Regulation APC 13

A REGULATION setting standards for sulfur dioxide emissions from the operation of all stationary sources, pursuant to the authority found in IC 1971, 13-1-1 and IC 1971, 13-7 and amending in its entirety Regulation APC 13, promulgated on September 14, 1972.

Section 1. Scope

Sulfur dioxide emissions from all stationary sources in the State of Indiana exceeding 10 pounds per hour shall comply with the rules set forth below. This regulation, however, shall not apply to resident dwellings or apartment buildings containing four or fewer units.

(a) New Large Sources: The maximum allowable sulfur dioxide emissions for new equipment of more than 250 million BTU per hour heat input shall be that value expressed in the Federal New Source Performance Standards 40 CFR Part 60. These sources shall, also, comply with Section 3 of this regulation.

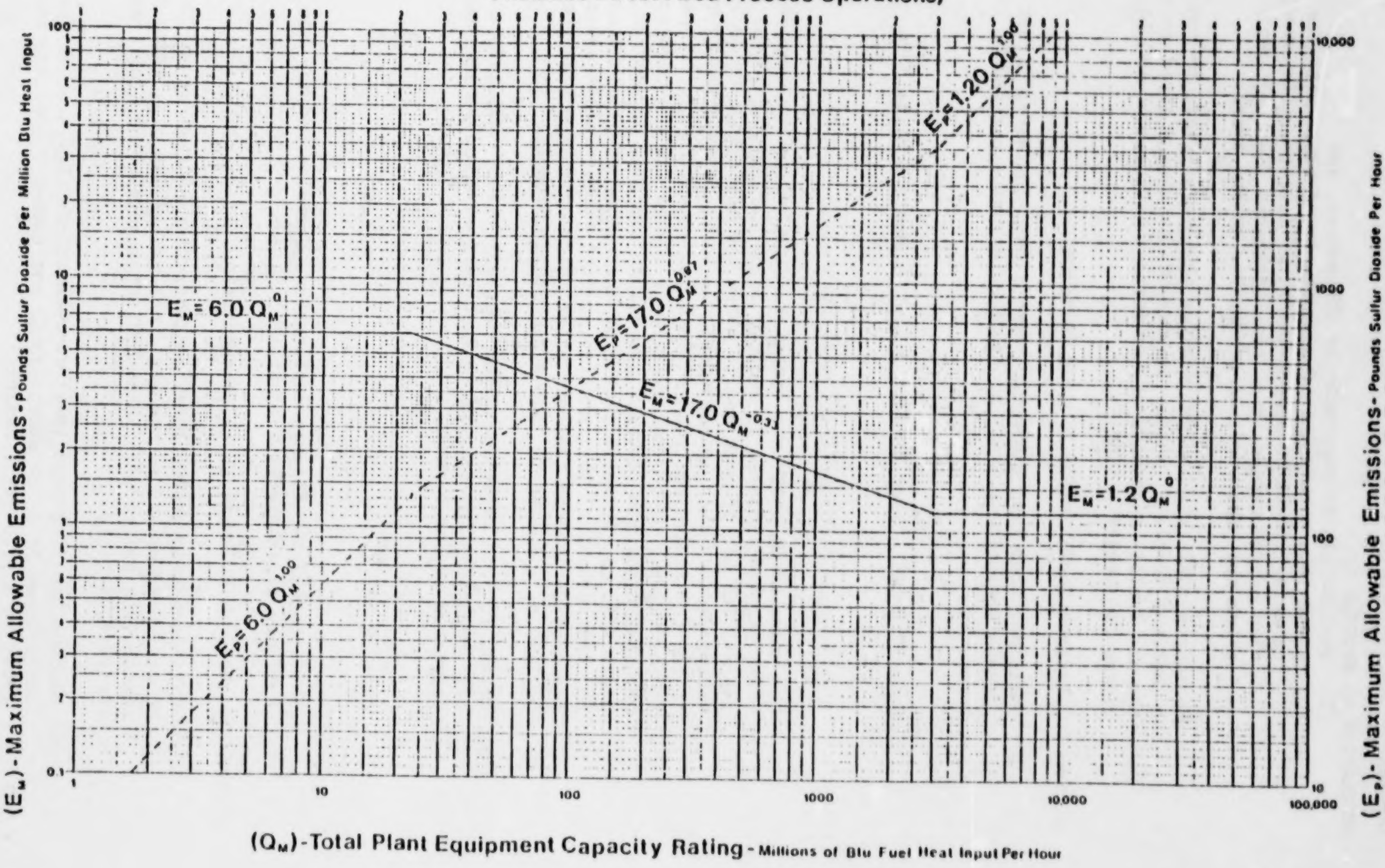
(b) New Small Sources and All Existing Sources: The maximum allowable sulfur dioxide emissions from new equipment with a BTU input of 250 million BTU per hour heat input or less, shall be limited to the smaller value, as determined by Section 2 or 3 of this regulation. In priority A and B air quality basins only, sulfur dioxide emissions from existing equipment, regardless of capacity, shall be limited to the smaller value, as determined by Section 2 or 3 of this regulation; however, compliance with Section 2 or 3 for said existing sources in priority B air quality basins shall not be required when:

- (1) an exemption is requested for a specific boiler, and
- (2) the boiler is used no more than 500 equivalent full load hours per year, and
- (3) there is no practicable control method available, and
- (4) there will be no violation of any ambient air quality standards, and
- (5) said exemption is set forth in a valid operation permit under the provisions of Regulation APC 19.

(c) Basic Stack Construction Provisions: All new exhaust gas stacks or chimneys emitting sulfur dioxide shall be no less than 50 feet in height. Further, all such new stacks shall be at least 2½ times the height of the tallest existing building or obstruction, located within 500 feet of the stack, that has a major effect on air movements. However, this height requirement may be reduced and incorporated into the terms of a construction or operation permit as required in Regulation APC 19 when:

Allowable Sulfur Dioxide Emissions for Fuel Burning Operations

(Includes Direct Fired Process Operations)



(1) application is duly made by the source, and

(2) there is a submission of adequate proof that: (i) there is no major effect on air movement; or (ii) there is no violation of the ground level concentrations (Sec. 3); or (iii) there are other reasons acceptable to the Board.

No source shall emit sulfur dioxide which may create or contribute to ambient levels of sulfur dioxide at the ground level in excess of the air quality standards as set forth in Regulation APC 14 at or beyond its property line.

Section 2. Maximum Total Sulfur Dioxide Emissions

(a) Emissions from fuel combustion operations, including direct-fired process operations, shall be limited to that expressed by the formulas:

$$E_m = 17.0\ Q_m^{-0.33} \text{ or } E_p = 17.0\ Q_m^{0.67} \text{ where } E_p = E_m \times Q_m$$

(See Section 3 for definition of terms.)

The value of E_m shall not exceed 6.0 lbs. of sulfur dioxide nor shall it be required that E_m be reduced below 1.2 lbs. of sulfur dioxide per million BTU of heat input. When the heat input value is for material other than Indiana coal, Q_m shall be modified by the ratio of the dry stoichiometric effluent gas volume in cu. ft. per million BTU heat input of the material to be burned and the corresponding dry stoichiometric effluent gas volume for that of average Indiana coal (9850 cu. ft./million BTU of heat input at standard conditions). For the purpose of this section, direct-fired process operations shall be defined as that operation which uses oxygen in the air to combine with sulfur to form a marketable product.

(b) Emissions from existing sulfur recovery plants and emissions from all operations not subject to Section 2(a) shall be limited to that expressed by the formula:

$$E_p = 19.5P^{0.67}$$

The attached two figures depict these formulas and may be used to estimate allowable emissions.

Section 3. Allowable Ground Level Concentratio

(a) Maximum hourly ground level concentrations (C_{max}) of sulfur dioxide contributed by any source shall not exceed 200 micrograms per cubic meter in a priority A basin, or 500 micrograms per cubic meter in a priority B basin.

(b) Maximum hourly ground level concentrations (C_{max}) of sulfur dioxide contributed by a new source shall not exceed 900 micrograms per cubic meter in a priority C basin.

(c) Ground level hourly concentrations for (a) and (b) above shall be determined by:

(1) The formulas:

$$C_{max} = \frac{90 S_f Q_m^{0.75} n^{0.25}}{a h_s}$$

for fuel combustion operations including direct fired process operations.

$$C_{max} = \frac{40 S_p P^{0.75} n^{0.25}}{a h_s}$$

for process operations subject to Section 2(b) of this regulation.

(2) Other formulas or methods considered acceptable to the Board.

(d) Factors in the formulas, for Sections 2 and 3, are defined as follows:

C_{max} = maximum hourly ground level concentration with respect to distance and at the "critical wind speed for level terrain" resulting from the point source. This value shall not exceed those numbers specified in (a) and (b) above. However, lower values may be specified by the Board where terrain and other conditions dictate.

S_f = pounds of sulfur dioxide emitted per million BTU of heat input value of the fuel.

S_p = pounds of sulfur dioxide emitted per ton of process weight input.

E_m = maximum allowable sulfur dioxide emissions in pounds per million BTU fuel heat input.

E_p = maximum allowable sulfur dioxide emissions in pounds per hour.

Q_m = total combustion equipment capacity rating, fuel heat input in millions of BTU per hour.

P = total process equipment capacity weight input, tons per hour.

n = number of stacks or chimneys in fuel burning or process operations.

a = plume rise factor of 0.7.

h_s = stack height in feet. If a number of stacks with varying heights for different equipment capacity ratings exist, an average stack height to represent "n" stacks shall be calculated by taking the sum of the height of each stack multiplied by its hourly sulfur dioxide emission rate and dividing the sum by the total plant hourly sulfur dioxide emission rate. If the emission rate per million BTU of heat input for all stacks is the same, other means acceptable to the Board for ascertaining "h_s" may be used.

INDIANA

REGULATION 13

Section 4. Applicability

The following shall apply to all existing sources:

(a) All sources of sulfur dioxide emissions in priority A air quality basins shall comply with Sections 1, 2, and 3 of this regulation. In the event a source is not in compliance with this regulation, the schedule specified by Section 5(a) shall be followed.

(b) All fuel combustion sources, including direct-fired process operations, of sulfur dioxide emissions, in priority B air quality basins, shall comply with Sections 1, 2, and 3 of this regulation by May 31, 1975. In the event a source is not in compliance with this regulation, the schedule specified by Section 5(a) shall be followed. A source may elect to delay compliance until May 31, 1978, provided it installs interim controls to maintain air quality standards for sulfur dioxide, as set forth in APC 14, by July 1, 1975, as follows: (i) install and operate such numbers of properly located continuous air quality and meteorological monitors as the Board may require; (ii) provide the Board with reports on all collected ambient air quality and meteorological data on a monthly basis; and (iii) provide protection during adverse meteorological conditions through the use of low sulfur fuel (that fuel required to comply with Sections 1, 2, and 3 of this regulation) for two weeks or more, reducing fuel usage, or other means acceptable to the Board; however, those sources less than 500 million BTU need not comply with (i) and (ii) above. All sources using interim controls must comply with Sections 1, 2, and 3 no later than May 31, 1978, in accordance with the schedules specified in Section 5(b) of this regulation.

(c) All fuel combustion sources, including direct-fired process operations, of sulfur dioxide emissions in a priority C air quality basin, must maintain a supply of low sulfur fuel (that which is required to comply with Section 2 of this regulation) sufficient to operate the plant for two weeks or more as required by the Board during adverse meteorological conditions. This low sulfur fuel supply shall be available by July 1, 1975. In addition, a fuel combustion source of 500 million BTU or greater in a priority C air basin shall (1) install and operate such number of properly located continuous air quality and meteorological monitors as the Board may require; and (2) provide the Board with reports on all collected ambient air quality and meteorological data on a monthly basis.

Section 5. Compliance Schedules

(a) All sources of sulfur dioxide emissions located in a priority A air quality basin and not in compliance with Sections 1, 2, and 3 of this regulation and all sources in priority B or C air quality basins that elect to achieve compliance by May 31, 1975, shall adhere to the following schedule:

REGULATION 13 SECTION 5

(1) Submit a letter of intent no later than three months after this regulation is promulgated, which includes a schedule of dates for such items as submittal of plans, start of construction, completion of construction, for achieving compliance with Sections 1, 2, and 3, whichever is applicable. If compliance is to be accomplished by facility shut down, it shall be so specified.

(2) Achieve compliance by May 31, 1975.

(3) Submit performance results by July 31, 1975.

(b) All sources of sulfur dioxide emissions located in a priority B air quality basin and not in compliance with Sections 1, 2, and 3 of this regulation and electing to comply with the interim provisions of Section 4 shall adhere to the following schedule to achieve compliance:

(1) Submit a letter of intent no later than three months after this regulation is promulgated, which includes a schedule of dates for such items as submittal of plans, start of construction, and completion of construction, for achieving compliance with Sections 1, 2, and 3 of this regulation. If compliance is to be accomplished by facility shut down, it shall be so specified. This schedule, when approved by the Board, shall constitute a legally binding commitment on the company submitting it.

(2) Achieve compliance by May 31, 1978.

(3) Submit performance results by July 31, 1978.

REGULATION APC 17

Subsequent to due publication of notice and public hearing having been held on March 26, 1974, as required by the provisions of IC 1971, 4-22-2, as originally enacted in Acts of 1945, Chapter 120, the Indiana Air Pollution Control Board, at its regular meeting held at the Indiana State Board of Health Building, 1330 West Michigan Street, Indianapolis, Indiana, on May 22, 1974, at which meeting a quorum was present, unanimously adopted the following new rule APC 17.

A REGULATION establishing the maximum allowable nitrogen oxides emissions for the State of Indiana pursuant to the authority granted in IC 1971, 13-1-1.

Section 1. Emissions from all stationary sources of nitrogen oxides shall be limited to the following:

(a) No person shall cause or allow the emission of nitrogen oxides from fuel burning equipment with a capacity of 250 million Btu per hour or more in excess of the following limits:

  (1) In the case of gas firing, 0.20 pounds of NO_2 per million Btu of heat input.

  (2) In the case of oil firing, 0.30 pounds of NO_2 per million Btu of heat input.

  (3) In the case of coal firing, 0.70 pounds of NO_2 per million Btu of heat input.

Section 2. This regulation is applicable to all existing stationary sources of Nitrogen Oxides emissions located within a "Basin Priority A" as defined in Regulation APC 22 and to all new stationary sources regardless of location.

INDIANA CONTINUOUS EMISSIONS MONITORING

(Regulation APC 8, Continuous Monitoring of Emissions of Certain Selected Facilities, Effective January 26, 1977)

Section 1 Applicability

Sources in the following categories shall continuously monitor and record emissions of air pollutants according to Appendix I of this regulation.

(a) Fossil fuel-fired steam generators of greater than 250 million BTU per hour heat input capacity.

(b) Nitric acid plants of greater than 300 tons per day production capacity, the production capacity being expressed at 100% acid.

(c) Sulfuric acid plants of greater than 300 tons per day production capacity, the production capacity being expressed at 100% acid.

(d) Petroleum refinery catalyst regenerators for fluid bed catalytic cracking units of greater than 20,000 barrels (840,000 gallons) per day fresh feed capacity.

Section 2 Compliance

All sources must be in compliance with this regulation by July 1, 1978.

Appendix I—Minimum Emission Monitoring Requirements

1.0 *Purpose.* This appendix sets forth the minimum requirements for continuous emission monitoring and recording. These requirements include the source categories to be affected; emission monitoring, recording, and reporting requirements for those sources; performance specifications for accuracy, reliability, and durability of acceptable monitoring systems; and techniques to convert emission data to units of the applicable State emission standard. Such data must be reported to the Air Pollution Control Board (APCB) as an indication of whether proper maintenance and operating procedures are being utilized by source operators to maintain emission levels at or below emission standards. Such data may be used directly or indirectly for compliance determination or any other purpose deemed appropriate by the APCB.

1.1 *Applicability.* The owner or operator of an emission source in a category listed in this appendix shall: (1) install, calibrate, operate, and maintain all monitoring equipment necessary for continuously monitoring the pollutants specified in this appendix for the applicable source category; and (2) complete the installation and performance tests of such equipment and begin monitoring and recording by July 1, 1978. The source categories and the respective monitoring requirements are listed below:

1.1.1 Fossil fuel-fired steam generators, as specified in paragraph 2.1 of this appendix, shall be monitored for opacity, nitrogen oxides emissions, sulfur dioxide emissions, and oxygen or carbon dioxide.

1.1.2 Fluid bed catalytic cracking unit catalyst regenerators, as specified in paragraph 2.4 of this appendix, shall be monitored for opacity.

1.1.3 Sulfuric acid plants, as specified in paragraph 2.3 of this appendix, shall be monitored for sulfur dioxide emissions.

1.1.4 Nitric acid plants, as specified in paragraph 2.2 of this appendix, shall be monitored for nitrogen oxides emissions.

1.2 *Exemptions.* Exemptions from the monitoring requirements of paragraph 1.1 of this appendix shall be granted by the APCB to any source which is:

1.2.1 Subject to new source performance standards promulgated in 40 CFR Part 60, pursuant to Section 111 of the Clean Air Act; or

1.2.2 Not subject to an applicable emission standard of the State Implementation Plan (SIP); or

1.2.3 Scheduled for retirement within five years after inclusion of monitoring requirements for the source in Appendix I, provided that adequate evidence and guarantees are provided that clearly show that the source will cease operations prior to such date.

1.3 *Extension.* Extensions of the time provided for installation of monitors may be granted by the APCB for facilities unable to meet the prescribed timeframe (compliance by July 1, 1978) provided the owner or operator of such facility demonstrates that good faith efforts have been made to obtain and install such devices within such prescribed timeframe.

1.4 *Monitoring System Malfunction.* When a malfunction of any monitoring system lasts more than one hour, the Technical Secretary shall be notified by telephone, or telegraph, as soon as practicable but in no event later than four daytime business hours after the beginning of said occurrence. Information of the scope and expected duration of the malfunction shall be provided. A temporary exemption from the monitoring and reporting requirement of this appendix may be granted, provided that the owner or operator shows, to the satisfaction of the Technical Secretary, that the malfunction was unavoidable and is being repaired as expeditiously as practicable.

2.0 *Minimum Monitoring Requirement.* The sources listed in paragraph 1.1 of this appendix shall, as a minimum, meet the following basic requirements:

2.1 *Fossil Fuel-Fired Steam Generators.* Each fossil fuel-fired steam generator, except as provided in the following subparagraphs, with an annual average capacity factor of greater than 30 percent, as reported to the Federal Power Commission for calendar year 1974 or as otherwise demonstrated to the APCB by the

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owner or operator, shall conform with the following monitoring requirements when such facility is subject to an emission standard of the SIP for the pollutant in question.

2.1.1 A continuous monitoring system for the measurement of opacity which meets the performance specifications of paragraph 3.1.1 of this appendix shall be installed, calibrated, maintained, and operated in accordance with the procedures of this appendix by the owner or operator of any such steam generator of greater than 250 million BTU per hour heat input except where:

2.1.1.1 Gaseous fuel is the only fuel burned; or

2.1.1.2 Oil or a mixture of gas and oil are the only fuels burned and the source is able to comply with Regulations APC 3 and APC 4R without utilization of particulate matter collection equipment, and where the source has never been found, through any administrative or judicial proceedings, to be in violation of Regulation APC 3.

2.1.2 A continuous monitoring system for the measurement of sulfur dioxide which meets the performance specifications of paragraph 3.1.3 of this appendix shall be installed, calibrated, maintained, and operated on any fossil fuel-fired steam generator of greater than 250 million BUT per hour heat input which has installed sulfur dioxide pollutant control equipment.

2.1.3 A continuous monitoring system for the measurement of nitrogen oxides which meets the performance specifications of paragraph 3.1.2 of this appendix shall be installed, calibrated, maintained, and operated on fossil fuel-fired steam generators of greater than 1000 million BTU per hour heat input when such facility is located in an Air Quality Control Region (AQCR) where the Administrator of the U.S. Environmental Protection Agency (EPA) has specifically determined that a control strategy for nitrogen dioxide is necessary to attain the national standards, unless the source owner or operator demonstrates during source compliance tests as required by the APCB that such a source emits nitrogen oxides at levels 30 percent or more below the emission standard set forth in Regulation APC 17.

2.1.4 A continuous monitoring system for the measurement of the percent oxygen or carbon dioxide which meets the performance specifications of paragraphs 3.1.4 or 3.1.5 of this appendix shall be installed, calibrated, operated, and maintained on all fossil fuel-fired steam generators where measurements of oxygen or carbon dioxide in the flue gas are required to convert either sulfur dioxide or nitrogen oxides continuous monitoring data, or both, to units of the emission standard in the SIP.

2.2 *Nitric Acid Plants.* Each nitric acid plant of greater than 300 tons per day production capacity, the production capacity being expressed as 100 percent acid, located in an AQCR where the Administrator of the U.S. EPA has specifically determined that a control strategy for nitrogen dioxide is necessary to attain the national standard shall install, calibrate, maintain, and operate a continuous monitoring system for the measurement of nitrogen oxides which meets the performance specifications of paragraph 3.1.2 of this appendix for each nitric acid producing facility within such plant.

2.3 *Sulfuric Acid Plants.* Each sulfuric acid plant of greater than 300 tons per day production capacity, the production capacity being expressed as 100 percent acid, shall install calibrate, maintain, and operate a continuous monitoring system for the measurement of sulfur dioxide which meets the performance specifications of paragraph 3.1.3 of this appendix for each sulfuric acid producing facility within such plant.

2.4 *Fluid Bed Catalytic Cracking Catalyst Regenerators at Petroleum Refineries.* Each catalyst regenerator for fluid bed catalytic cracking units of greater than 20,000 barrels per day of fresh feed capacity shall install, calibrate, maintain, and operate a continuous monitoring system for the measurement of opacity which meets the performance specifications of paragraph 3.1.1 of this appendix.

3.0 *Minimum Specifications.* Owners and operators of monitoring equipment installed to comply with this appendix, except as provided in paragraph 3.2 of this appendix, shall demonstrate compliance with the following performance specifications.

3.1 *Performance Specifications.* The performance specifications set forth in Appendix B of 40 CFR Part 60, are incorporated herein by reference, and shall be used to determine acceptability of monitoring equipment installed pursuant to this appendix except that where reference is made to the "Administrator" in Appendix B, 40 CFR Part 60, the term "APCB" should be inserted for the purpose of this appendix. Performance Specifications to be used with each type of monitoring system are listed below.

3.1.1 Continuous monitoring systems for measuring opacity shall comply with Performance Specification 1.

3.1.2 Continuous monitoring systems for measuring nitrogen oxides shall comply with Performance Specification 2.

3.1.3 Continuous monitoring systems for measuring sulfur dioxide shall comply with Performance Specification 2.

3.1.4 Continuous monitoring systems for measuring oxygen shall comply with Performance Specification 3.

3.1.5 Continuous monitoring systems for measuring carbon dioxide shall comply with Performance Specification 3.

3.2 *Exemptions.* Any source which has purchased an emission monitoring system(s) prior to September 11, 1974, may be granted an exemption by the APCB from meeting such test procedures prescribed in Appendix B of 40 CFR Part 60, for a period not to extend past October 1, 1981.

3.3 *Calibration Gases.* For nitrogen oxides monitoring systems installed on fossil fuel-fired steam generators the pollutant gas used to prepare calibration gas mixtures (Section 2.1, Performance Specification 2, Appendix B, 40 CFR Part 60) shall be nitrogen oxide (NO). For nitrogen oxides monitoring systems installed in nitric acid plants the pollutant gas used to prepare calibration gas mixtures (Section 2.1, Performance Specification 2, Appendix B, 40 CFR Part 60) shall be nitrogen dioxide (NO2). This gas shall also be used for daily checks under paragraph 3.7 of this appendix as applicable. For sulfur dioxide monitoring systems installed on fossil fuel-fired steam generators or sulfuric acid plants the pollutant gas used to prepare calibration gas mixtures (Section 2.1, Performance Specification 2, Appendix B, 40 CFR Part 60) shall be sulfur dioxide (SO2). Span and zero gases should be traceable to National Bureau of Standards reference gases whenever these reference gases are available. Every six months from date of manufacture, span and zero gases should be reanalyzed by conducting triplicate analyses using the reference methods in Appendix A, 40 CFR Part 60 as follows: for sulfur dioxide, use Reference Method 6; for nitrogen oxide, use Reference Method 7; and for carbon dioxide or oxygen, use Reference Method 3. The gases may be analyzed at less frequent interverals if longer shelf lives are guaranteed by the manufacturer.

3.4 *Cycling Times.* Cycling times include the total time a monitoring system requires to sample, analyze, and record an emission measurement.

3.4.1 Continuous monitoring systems for measuring opacity shall complete a minimum of one cycle of operation sampling analyzing, and data recording for each successive 10-second period.

3.4.2 Continuous monitoring systems for measuring oxides of nitrogen, carbon dioxide, oxygen, or sulfur dioxide shall complete a minimum of one cycle of operation (sampling, analyzing, and data recording) for each successive 15-minute period.

3.5 *Monitor Location.* All continuous monitoring systems or monitoring devices shall be installed such that representative measurements of emissions or process parameters (i.e., oxygen, or carbon dioxide) from the affected facility are obtained. Additional guidance for location of continuous monitoring systems to obtain representative samples are contained in the applicable Performance Specifications of Appendix B, 40 CFR Part 60.

3.6 *Combined Effluents.* When the effluents from two or more affected facilities of similar design and operating characteristics are combined before being released to the atmosphere, the APCB may allow monitoring systems to be installed on the combined effluent, if the owner or operator shows that measurement of the combined effluents is at least as accurate as simultaneous measurement of each effluent prior to their combining in their common stack.

3.7 *Zero and Drift.* Owners or operators of all continuous monitoring systems installed in accordance with the requirements of this appendix shall record the zero and span drift in accordance with the method prescribed by the manufacturer of such instruments; subject the instruments to the manufacturer's recommended zero and span check at least once daily unless the manufacturer has recommended adjustments at shorter intervals, in which case such recommendations should be followed; adjust the zero and span whenever the 24-hour zero drift or 24-hour calibration drift limits of the applicable performance specifications in Appendix B of 40 CFR Part 60 are exceeded; and adjust continuous monitoring systems referenced by paragraph 3.2 of this appendix whenever the 24-hour calibration drift exceeds 10 percent of the emission standard.

3.8 *Span.* Instrument span should be approximately 200 per cent of the expected instrument data display output corresponding to the emission standard for the source.

3.9 *Alternative Procedures and Requirements.*

3.9.1 Alternative locations for installing continuous monitoring systems or monitoring devices may be approved by the APCB when the owner or operator can demonstrate that installation at alternative locations will enable accurate and representative measurements.

3.9.2 Alternative procedures for performing calibration checks may be approved by the APCB when the owner or operator can demonstrate that such alternate procedures will still result in meeting the specifications set forth in tables 1.1 for opacity, 2.1 for sulfur dioxide and nitrogen oxides, and 3.1 for oxygen and carbon dioxide, as contianed in Appendix B, 40 CFR Part 60.

3.9.3 Alternative continuous monitoring systems that do not meet the spectral response requirements in Performance Specification 1, Appendix B, 40 CFR Part 60, but adequately demonstrate a definite and consistent relationship between their measurements and the opacity measurement of a system complying with the requirements in Performance Specification 1 may be approved by the APCB. The APCB may require that such demonstration be performed for each affected facility.

4.0 *Minimum Data Requirements.*

4.1 Owners or operators of facilities required to install continuous monitoring systems shall submit a written report of excess emissions for each calendar quarter and the nature and cause of the excess emissions, if known. The averaging periods used for data reporting shall be six minutes for opacity and three hours for gaseous measurements. The required report shall include, as a minimum, the data stipulated in this appendix.

4.2 For opacity measurements, the summary shall consist of the magnitude in actual percent opacity of all six-minute averages of opacity greater than 40 percent opacity for each hour of operation of the facility. Average values may be obtained by integration over six minutes or by arthmetically averaging a minimum of four equally spaced, instantaneous, opacity measurements per minute.

4.3 For gaseous measurements the summary shall consist of emission averages, in units of the applicable standard for each 3-hour period during which the applicable standard was exceeded.

4.4 The date and time identifying each period during which the continuous monitoring system was inoperative, except for zero and span checks, and the nature of system repair or adjustments shall be reported. The APCB may require proof of continuous monitoring system performance whenever system repairs or adjustments have been made.

4.5 When no excess emissions have occurred and the continuous monitoring system(s) has not been inoperative, repaired or adjusted, such information shall be included in the report.

4.6 Owners or operators of affected facilities shall maintain a file of all information reported in the quarterly summaries, and all other data collected either by the continuous monitoring system or as necessary to convert monitoring data to the units of the applicable standard for a minimum of two years from the date of collection of such data or submission of such summaries.

5.0 *Data Reduction.* Owners or operators of affected facilities shall use the following procedures for converting monitoring data to units of the standard where necessary.

5.1 For fossil fuel-fired steam generators the following procedures shall be used to convert gaseous emission monitoring data in parts per million (ppm) to pounds per million BTU where necessary.

5.1.1 When the owner or operator of a fossil fuel-fired steam generator elects under subparagraph 2.1.4 of this appendix to measure oxygen in the flue gases, the measurements of the pollutant concentration and oxygen shall be on a dry basis and the following conversion procedure used:

$$E = \frac{CF\,(20.9\qquad)}{(20.9 - \%\,O_2)}$$

5.1.2 When the owner or operator elects under subparagraph 2.1.4 of this appendix to measure carbon dioxide in the flue gases, the measurement of the pollutant concentration and the carbon dioxide concentration shall each be on a consistent basis (wet or dry) and the following conversion procedure used:

$$E = \frac{CF_c\,(100\qquad)}{(\%\,CO_2\quad)}$$

5.1.3 The values used in the equations under paragraph 5.1 are derived as follows:

E = Pollutant emission, lb/million BTU.

C = Pollutant concentration, lb/dscf, determined by multiplying the average concentration (ppm) for each hourly period by $2.64x10^{-9M}$ lb/dscf per ppm where M = pollutant molecular weight, lb/lb-mole. M = 64 for sulfur dioxide and 46 for oxides of nitrogen.

$\%O_2$, $\%CO_2$ = Oxygen or carbon dioxide volume (expressed as percent) determined with equipment specified under paragraph 2.1.4 of this appendix.

F.Fc = a factor representing a ratio of the volume of dry flue gases generated to the calorific value of the fuel combusted (F), and a factor representing a ratio of the volume of carbon dioxide generated to the calorific value of the fuel combusted (Fc), respectively. Values of F and Fc are given in Section 60.45(f) of 40 CFR Part 60, as applicable.

5.2 For sulfuric acid plants the owner or operator shall:

5.2.1 Establish a conversion factor three times daily according to the procedures of Section 60.84(b) of 40 CFR Part 60;

5.2.2 Multiply the conversion factor by the average sulfur dioxide concentration in the flue gases to obtain average sulfur dioxide emissions in lb/ton; and

5.2.3 Report the average sulfur dioxide emission for each 3-hour period in excess of the emission standard set forth in Regulation APC 13, in the quarterly summary.

5.3 For nitric acid plants the owner or operator shall:

5.3.1 Establish a conversion factor according to the procedures of Section 60.73(b) of 40 CFR Part 60;

5.3.2 Multiply the conversion factor by the average nitrogen oxides concentration in the flue gases to obtain nitrogen oxides emissions in lb/ton;

5.3.3 Report the average nitrogen oxides for each averaging period in excess of the emission standard set forth in APC 17, in the quarterly summary.

5.4 *Alternate Data Reporting and Reduction Procedures.*

5.4.1 Alternate procedures for computing emission averages that do not require integration of data may be approved by the APCB if the owner or operator shows that his procedures are at least as accurate as those in this appendix.

5.4.2 Alternative methods of converting pollutant concentration measurements to units of the emission standard may be approved by the APCB if the owner or operator shows that his procedures are at least as accurate as those in this appendix.

6.0 *Special Considerations.*

6.1 Alternative monitoring requirements may be allowed when the APCB determines that monitoring systems prescribed by this appendix cannot be installed due to physical limitations at the facility.

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4.3(2)

d. Visible emissions. No person shall allow, cause or permit the emission of visible air contaminants of a density or shade equal to or darker than that designated as Number 2 on the Ringelmann Chart, or 40 percent opacity, into the atmosphere from any equipment, internal combustion engine, premise fire, open fire or stack, except as provided below and in chapter 5.

4.3(3)

a. Sulfur dioxide from use of solid fuels.

(1) After July 19, 1976, no person shall allow, cause, or permit the emission of sulfur dioxide into the atmosphere from an existing solid fuel-burning unit (i.e., a unit in operation prior to September 23, 1970) in a facility with a total coal burning capacity of greater than 500 million BTU per hour heat input in an amount greater than 8 pounds, replicated maximum two-hour average, per million BTU of heat input.

(3) No person shall allow, cause, or permit the emission of sulfur dioxide into the atmosphere from any new solid fuel-burning unit (i.e., a unit which was not in operation or for which components had not been purchased, or which was not under construction prior to September 23, 1970) which has a capacity of 250 million BTU or less per hour heat input, in an amount greater than 6 pounds, replicated maximum two-hour average, per million BTU of heat input.

b. Sulfur dioxide from use of liquid fuels. No person shall allow, cause, or permit the emission of sulfur dioxide into the atmosphere in an amount greater than 2.5 pounds of sulfur dioxide, replicated maximum two-hour average, per million BTU of heat input from a liquid fuel-burning unit. Notwithstanding this paragraph, a fossil fuel-fired steam generator to which 4.1(2)"*a*" applies shall comply with 4.1(2)"*a*".

c. Sulfur dioxide from sulfuric acid manufacture. After January 1, 1975, no person shall allow, cause or permit the emission of sulfur dioxide from an existing sulfuric acid manufacturing plant in excess of 30 pounds of sulfur dioxide, maximum two-hour average, per ton of product calculated as 100 percent sulfuric acid.

d. Acid mist from sulfuric acid manufacture. After January 1, 1974, no person shall allow, cause or permit the emission of acid mist calculated as sulfuric acid from an existing sulfuric acid manufacturing plant in excess of 0.5 pounds, maximum two-hour average, per ton of product calculated as 100 percent sulfuric acid.

e. Other processes capable of emitting sulfur dioxide. After January 1, 1974, no person shall allow, cause or permit the emission of sulfur dioxide from any process, other than sulfuric acid manufacture, in excess of 500 parts per million, based on volume. This paragraph shall not apply to devices which have been installed for air pollution abatement purposes where it is demonstrated by the owner of the source that the ambient air quality standards are not being exceeded.

4.4(12)

b. Visible emissions. No person shall allow, cause or permit the operation of an incinerator in a manner such that it produces visible air contaminants which have an appearance, density or shade equal to or darker than Number 2 on the Ringelmann Chart, or 40 percent opacity; except that visible air contaminants which have an appearance, density or shade not darker than Number 3 on the Ringelmann Chart, or 60 percent opacity, may be emitted for a period or periods aggregating not more than three minutes in any 60-minute period during an operation breakdown or during the cleaning of air pollution control equipment.

400—5.1(455B) Exceptions due to maintenance or breakdowns.

5.1(1) *Maintenance of power or heating plant.* When building a new fire, when manually cleaning a fire, or when blowing tubes and flues in a power plant, heating plant or domestic heating plant, visible air contaminants of an appearance, density or shade equal to or darker than that designated as Number 2 on the Ringelmann Chart, or 40 percent opacity, may be emitted into the atmosphere for a period or periods aggregating not more than six minutes in any 60-minute period.

7.1(1) *Continuous monitoring of opacity from coal-fired steam generating units.* The owner or operator of any coal-fired or coal-gas-fired steam generating unit with a rated capacity of greater than 250 million BTUs per hour heat input shall install, calibrate, maintain, and operate continuous monitoring equipment to monitor opacity. If an exhaust services more than one steam generating unit as defined in the preceding sentence, the owner has the option of installing opacity monitoring equipment on each unit or on the common stack. Such monitoring equipment shall conform to performance specifications specified in 7.1(9) and shall be operational within eighteen months of the date these rules become effective. The executive director may require the owner or operator of any coal-fired or coal-gas-fired steam generating unit to install, calibrate, maintain and operate continuous monitoring equipment to monitor opacity whenever the compliance status, history of operations, ambient air quality in the vicinity surrounding the generator or the type of control equipment utilized would warrant such monitoring.

7.1(4) *Continuous monitoring of sulfur dioxide from sulfuric acid plants.* The owner or operator of any sulfuric acid plant of greater than 300 tons per day production capacity, the production being expressed as 100 percent acid, shall install, calibrate, maintain and operate continuous monitoring equipment to monitor sulfur dioxide emissions. Said monitoring equipment shall conform to the minimum performance specifications specified in 7.1(9) and shall be operational within eighteen months of the date these rules become effective.

7.1(5) *Maintenance of records of continuous monitors.* The owner or operator of any facility which is required by any of 7.1(1) to 7.1(4) to install, calibrate, maintain, and operate continuous monitoring equipment shall maintain, for a minimum of two years, a file of all information pertinent to each monitoring system present at the facility. Such information must include but is not limited to all emissions data (raw data, adjusted data, and any or all adjusted factors used to convert emissions from units of measurement to units of the applicable standard), performance evaluations, calibrations and zero checks, and records of all malfunctions of monitoring equipment or source and repair procedures performed.

7.1(6) *Reporting of continuous monitoring information.* The owner or operator of any source affected by 7.1(1) to 7.1(4) shall report to the executive director on forms provided by the executive director, on a quarterly basis, all periods of recorded emissions in excess of the applicable standards, the results of all calibrations and zero checks and performance evaluations occurring during the reporting period, and any periods of monitoring equipment malfunctions or source upsets and any apparent reasons for these malfunctions and upsets.

7.1(7) *Tests by owner.* The owner of new or existing equipment or his authorized agent shall notify the executive director in writing, not less than fifteen days before a test performed to determine compliance with applicable regulations of chapter 4 or a performance evaluation of any required continuous monitor. Such notice shall include the time, the place, and the name of the person who will conduct the tests. A representative of the department shall be permitted to witness the tests. Results of the tests shall be submitted in writing to the executive director in the form of a comprehensive report.

7.1(8) *Tests by department.* Representatives of the department may conduct separate and additional air contaminant emission tests and continuous monitor performance tests of an installation on behalf of the state and at the expense of the state. Sampling holes, safe scaffolding and pertinent allied facilities, but not instruments or sensing devices, as needed, shall be requested in writing by the executive director and shall be provided by and at the expense of the owner of the installation at such points as specified in the request. The owner shall provide a suitable power source to the point or points of testing so that sampling instruments can be operated as required. Analytical results shall be furnished to the owner.

7.1(9) *Methods and procedures.* Stack sampling and associated analytical methods used to evaluate compliance with emission limitations of chapter 4 are those specified in the "Compliance Sampling Manual*" adopted by the commission on May 19, 1977. Sampling methods, analytical determinations and minimum performance specifications for performance evaluations of continuous monitor systems are those found in Appendix B, 40 C.F.R. Part 60 as amended through January 31, 1977.

7.1(10) *Exemptions from continuous monitoring requirements.* The owner or operator of any source affected by 7.1(1) to 7.1(4) is exempt if it can be demonstrated that any of the conditions set forth in this subrule is met with the provision that periodic recertification of the existence of these conditions can be requested.

a. An affected source is subject to a new source performance standard promulgated in 40 C.F.R. Part 60.

b. An affected steam generator had an annual capacity factor for calendar year 1974, as reported to the Federal Power Commission, of less than 30% or the projected use of the unit indicates the annual capacity factor will not be increased above 30% in the future.

c. An affected steam generator is scheduled to be retired from service within five years of the date these rules become effective.

d. An affected source (or the stack servicing an affected source) is already equipped with a continuous monitor purchased prior to September 11, 1974, but not meeting performance specifications referenced in 7.1(9) shall be exempt from the installation, calibration, maintenance, and operation of a replacement monitor meeting specifications of 7.1(9) for a period of up to five years from the date these rules become effective. However, in such cases the stipulations of 7.1(5) and 7.1(6) shall still apply to the existing monitor.

e. The executive director may provide a temporary exemption from the monitoring and reporting requirements during any period of monitoring system malfunction, provided that the source owner or operator shows, to the satisfaction of the executive director, that the malfunction was unavoidable and is being repaired as expeditiously as practical.

7.1(11) *Extensions.* The owner or operator of any source affected by 7.1(1) to 7.1(4) may request an extension of time provided for installation of the required monitor by demonstrating to the executive director that good faith efforts have been made to obtain and install the monitor in the prescribed time.

This rule (7.1) is intended to implement section 455B.12 of the Code.

[Filed August 24, 1970; amended December 11, 1973, December 17, 1974]

[Filed 5/27/77, Notice 8/9/76, 12/29/76—published 6/15/77, effective 7/20/77]

28-19-12 MEASUREMENT OF EMISSIONS

A. The Department may require any person responsible for the operation of an emission source to make or have tests made to determine the rate of contaminant emissions from the source whenever it has reason to believe on the basis of estimates of potential contaminant emission rates from the source and due consideration to probable efficiency of any existing control device, or visible emission determinations made by an official observer, that existing emissions exceed the limitations specified in these control regulations. Such tests may also be required pursuant to verifying that any newly installed control device meets performance specifications. If such a test demonstrates that the applicable emission requirement is met, no more than one (1) such test shall be required during any twelve (12) consecutive calender month period. Provided, however, that should the Department determine that the test do not represent normal operating conditions or emissions additional tests may be required. Such a requirement shall be considered as an order as provided for in K. S. A. 1970 Supp. 65-3011 and subject to all administrative and legal requirements specified therein.

C. The Director may require the owner or operator of any emission source which is subject to the provisions of these regulations to install, use, and maintain such stationary monitoring equipment as is required to demonstrate continuing compliance with any applicable emission limitations, and to maintain records and make reports regarding such measured emissions to the Department in a manner and on a schedule to be determined by the Director.

28-19-22 SULFUR COMPOUND EMISSIONS

A. No person shall cause or permit the emission of sulfur oxides from any primary non-ferrous smelters to exceed the amounts allowed in Table P-2 during any one hour.

TABLE P-2

Non-Ferrous Smelter Allowable Emissions

Type of Smelter	Sulfur Oxide Emissions (lb/hr)
Zinc Smelters	$0.564X^{0.85}$
Lead Smelters	$0.98X^{0.77}$
Where : X = total sulfur fed to smelter in lb/hr	

B. No person shall cause or permit the emission or combustion of any process gas stream that contains H_2S in concentrations greater than 10 grains per 100 cubic feet of gas without removal of the hydrogen sulfide in excess of this concentration. The provisions of this regulation shall not apply to:

(1) The combustion of such fuels for indirect heating purposes

(2) The combustion of such fuels where the gaseous products of combustion are used as raw materials for other processes

(3) The incineration of such gases having a gross heating value of less than 300 BTU per cubic feet at standard conditions and the fuel used to incinerate such waste gases does not contain sulfur or sulfur compounds in excess of the amount specified by this regulation.

C. Installations and equipment existing on January 1, 1972 shall be exempt from the provisions of this regulation. (Authorized by K.S.A. 1970 Supp. 65-3005, 65-3010: Effective January 1, 1972; Amended December 27, 1972)

28-19-30 GENERAL PROVISIONS

A. These regulations apply to installations in which fuel is burned for the primary purpose of producing steam, hot water, or hot air or other indirect heating of liquids, gases, or solids and, in the course of doing so, the products of combustion do not come into direct contact with process materials. Fuels include those such as coal, coke, lignite, coke breeze, gas, fuel oil, and wood, but do not include refuse. When any products or by-products of a manufacturing process are burned for the same purpose or in conjunction with any fuel, the same maximum emission limitations shall apply.

B. The heat content of coal shall be determined according to ASTM method D-271-64 "Laboratory Sampling and Analysis of Coal and Coke" or ASTM method D-2015-66 "Gross Calorific Value of Solid Fuel by the Adiabatic Bomb Calorimeter", their replacements or other recognized method as approved by the Department.

The heat content of oil shall be determined according to ASTM method D-240-64 "Heat of Combustion of Liquid Hydrocarbons by Bomb Calorimeter", or by its replacement, or other recognized method as approved by the Department.

C. For purposes of this regulation the heat input shall be the aggregate heat content of all fuels whose products of combustion pass through a stack or stacks. The heat input value used shall be the equipment manufacturer's or designer's guaranteed maximum input, whichever is greater. The total heat input of all fuel burning units at a plant or on a premise shall be used for determining the maximum allowable amount of particulate matter which may be emitted. (Authorized by K.S.A. 1970 Supp. 65-3005, 65-3006, 65-3010: Effective January 1, 1971, Amended January 1, 1972)

28-19-31

B. No person shall cause or permit visible contaminant emissions from any indirect heating equipment equal to or darker than the following:

(1) Existing Equipment: 40 percent opacity

(2) New Equipment: 20 percent opacity

C. No person responsible for operation of any indirect heating equipment having a heat input of 250 million BTU/hr or greater shall cause or permit the emission of more than 1.5 pounds of sulfur per million BTU of heat input per hour.

D. No person responsible for operation of any gas or oil-fired indirect heating equipment having a heat input of 250 million BTU/hr or greater shall cause or permit the emission of more than 0.30 pounds of Nitrogen Oxides per million BTU of heat input per hour.

28-19-31

E. No person responsible for operation of any coal fired indirect heating equipment having a heat input of 250 million BTU/hr or greater shall cause or permit the emission of more than 0.90 pounds of Nitrogen Oxides (calculated as NO_2) per million BTU of heat input per hour. (Authorized by K.S.A. 1970 Supp. 65-3005, 65-3010: Effective January 1, 1971, Amended January 1, 1972, Amended December 27, 1972)

28-19-41

B. No person may cause or permit the emission of visible contaminants from any incinerator of an opacity equal to or greater than 20 percent opacity. (Authorized by K.S.A. 1970 Supp. 65-3005, 65-3006, 65-3010: Effective January 1, 1971; Amended December 27, 1972)

28-19-50 OPACITY REQUIREMENTS

Subject to the provisions of Regulations 28-19-9 and 28-19-11, no person shall cause or permit visible contaminant emissions from the processing of any materials or other use of any premise which equal or exceed the following opacities; except as otherwise specified in other emission control regulations:

A. Existing processing of materials or other use of premises: 40 percent opacity.

B. Processing of materials or other use of premises not existing on the effective date of this regulation: 20 percent opacity.

(Authorized by K.S.A. 1970 Supp. 65-3005, 65-3010: Effective January 1, 1971; Amended December 27, 1972)

SECTION 1

(j) "Reference Method" means any method of sampling and analyzing for an air pollutant as prescribed in the United States Environmental Protection Agency Regulation of Performance for New Stationary Sources (40 CFR 60).

(k) "Equivalent Method" means any method of sampling and analyzing for an air pollutant which has been demonstrated to the United States Environmental Protection Agency's satisfaction to have a consistent and quantitatively known relationship to the reference method, under specified conditions.

Section 2. New Stationary Sources - Process Operations

(1) Applicability

The provisions of this section shall apply to each process operation commenced on or after the effective date of this regulation which shall be the affected facility.

(3) Standard for Particulate Matter

No person shall cause, suffer, allow or permit the emission into the open air of particulate matter from any affected facility, or from all air pollution control equipment installed on any affected facility which:

(a) Is equal to or greater than twenty (20) percent opacity; or,

(4) Test Methods and Procedures

The reference methods as defined in Subsection 1 (2) (j) shall be used to determine compliance with the standards prescribed in this regulation.

Section 3. Standards of Performance for Indirect Heat Exchangers

(1) Applicability

The provisions of this section shall apply to each indirect heat exchanger commenced on or after April 9, 1972, which is the affected facility. This section shall not apply to the following: Indirect Heat Exchangers with a capacity of one (1) million BTU per hour input or less and indirect heat exchangers using natural gas, liquid petroleum gas, or distillate fuel oil as a main fuel or combination of these as main or standby fuel, with a capacity of less than 50 million BTU per hour input. The combined total heat input capacity of all affected facilities shall be used to determine the total allowable emissions from a source.

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SECTION 3

(b) Exhibit greater than twenty (20) percent opacity except that a maximum of forty (40) percent opacity shall be permissible for not more than two (2) minutes in any hour. Where the presence of uncombined water is the only reason for failure to meet the requirements of this paragraph, such failure will not be a violation of this section.

(4) Standard for Sulfur Dioxide.

(a) On and after the date on which the performance test required to be conducted by Subsection 1(3) of this regulation is completed no owner or operator, subject to the provisions of this regulation shall cause to be discharged into the atmosphere from any affected facility any gases which contain sulfur lioxide in excess of the weights for each million BTU per hour heat input derived from fuel at any specified capacity rating (expressed in millions of BTU per hour heat input) as listed in table below:

MM BTU/HOUR HEAT INPUT	POUNDS SO_2 PER MILLION BTU HEAT INPUT LIQUID FUEL	SOLID FUEL
10 or less	3.0	5.0
50	1.5	2.5
100	1.2	1.8
150	1.0	1.5
200	0.9	1.3
250 or more	0.8	1.2

Interpolation of allowable emissions for intermediate heat input values not specified in the table above may be accomplished by use of the equations below for appropriate fuel and heat input specified:

Liquid fuel: $Y = 7.7223\ x^{-0.4106}$

Solid Fuel: $Y = 13.8781\ X^{-0.4434}$

Where Y = allowable sulfur dioxide emissions in pounds per million BTU per hour heat input, and

X = millions of BTU per hour heat input capacity rating.

(b) When different fuels are burned simultaneously in any combination, the applicable standard shall be determined by proration using the following formula:

Allowable sulfur dioxide emission in pounds per million BTU per hour heat input =

$$\frac{y(a)+z(b)}{y+z}$$

Where:

y is the percent of total heat input derived from liquid fuel,

z is the percent of total heat input derived from solid fuel,

a is the allowable sulfur dioxide emission in pounds per million BTU heat input derived from liquid fuel, and

b is the allowable sulfur dioxide emission in pounds per million BTU heat input derived from solid fuel.

(c) Compliance shall be based on the total heat input from all fuels burned, including gaseous fuels.

(5) Standard for Nitrogen Oxides.

(a) On and after the date on which the performance test required to be conducted by Subsection 1(3) of this regulation is completed no owner or operator of an indirect heat exchanger with an input heat capacity of 250 mm BTU per hour or more subject to the provisions of this section shall cause to be discharged into the atmosphere from any affected facility any gases which contain nitrogen oxides expressed as NO_2 in excess of:

1. 0.20 lb. per million BTU heat input (0.36 g. per million cal) derived from gaseous fuel.
2. 0.30 lb. per million BTU heat input (0.54 g. per million cal.) derived from liquid fuel.
3. 0.70 lb. per million BTU heat input (1.26 g. per million cal.) derived from solid fuel (except lignite).

(b) When different fuels are burned simultaneously in any combination the applicable standard shall be determined by proration. Compliance shall be determined by using the following formula:

Allowable nitrogen dioxide emission in pounds per million BTU/hour heat input =

$$\frac{x(0.20)+y(0.30)+z(0.70)}{x+y+z}$$

Where:

x is the percent of total heat input derived from gaseous fuel and,

y is the percent of total heat input derived from liquid fuel and,

z is the percent of total heat input derived from solid fuel (except lignite).

(6) Emission and Fuel Monitoring.

(a) There shall be installed, calibrated, maintained, and operated, in any indirect heat exchanger of more than 250 million BTU per hour heat input subject to the provisions of this section, emission monitoring instruments as follows:

1. A photoelectric or other type smoke detector and recorder, except where gaseous fuel is the only fuel burned.

2. An instrument for continuously monitoring and recording sulfur dioxide emissions, except where gaseous fuel is the only fuel burned, or where compliance is achieved through low sulfur fuels and representative sulfur analysis of fuels are conducted daily in accordance with Paragraph (c) or (d) of this subsection.

3. An instrument for continuously monitoring and recording emissions of nitrogen oxides.

(b) Instruments and sampling systems installed and used pursuant to this section shall be capable of monitoring emission levels within ±20 percent with a confidence level of ninety-five (95) percent and shall be calibrated in accordance with the method(s) prescribed by the manufacturer(s) of such instruments; instruments shall be subjected to manufacturers recommended zero adjustment and calibration procedures at least once per twenty-four (24) hour operating period unless the manufacturer(s) specifies or recommends calibration at shorter intervals, in which case such specifications or recommendations shall be followed. The applicable method specified by the Department shall be the reference method.

(c) The sulfur content of solid fuels, as burned, shall be determined in accordance with the methods specified by the Department.

(d) The sulfur content of liquid fuels, as burned, shall be determined in accordance with the methods specified by the Department.

(e) The rate of fuel burned for each fuel shall be measured daily or at shorter intervals and recorded. The heating value and ash content of fuels shall be ascertained at least once per week and recorded. Where the indirect heat exchanger is used to generate electricity, the average electrical output and the minimum and maximum hourly generation rate shall be measured and recorded daily.

(f) The owner or operator of an indirect heat exchanger subject to the provisions of this section shall maintain a file of all measurements required by this regulation. Appropriate measurements shall be reduced to the units of the applicable standard daily, and summarized monthly. The record of any such measurement(s) and summary shall be retained for at least two (2) years following the date of such measurements and summaries.

(g) The Department may require for any indirect heat exchanger unit of less than 250 million BTU per hour heat input any or all the emission and fuel monitoring required by this subsection.

(7) Test Methods and Procedures.

(a) The reference methods as defined in Subsection 1(2)(j) shall be used to determine compliance with the standards prescribed in this regulation.

(b) For determining particulates the sampling time for each run shall be at least sixty (60) minutes and the minimum sample volume shall be 0.85 dscm (30.0 dscf) except that smaller sampling times or sample volumes, when necessitated by process variables or other factors, may be approved by the Department.

(c) For determining sulfur dioxide and nitrogen oxides, the sampling site shall be the same as that for determining volumetric flow rate. The sampling point in the duct shall be at the centroid of the cross section or at a point no closer to the walls than 1 m (3.28 ft.).

(d) For determing sulfur dioxide, the minimum sampling time shall be twenty (20) minutes and the minimum sample volume shall be 0.02 dscm (0.71 dscf) except that smaller sampling times or sample volumes, when necessitated by process variables or other factors, may be approved by the Department. The sample shall be extracted at a rate proportional to the gas velocity at the sampling point. The arithmetic average of two samples shall constitute one run. Samples shall be taken at approximately thirty (30) minute intervals.

(e) For determining nitrogen oxides, each run shall consist of at least four (4) grab samples taken at approximate fifteen (15) minute intervals. The arithmetic mean of the samples shall constitute the run values.

(f) Heat input, expressed in cal per hr (BTU/hr), shall be determined during each testing period by multiplying the heating value of the fuel by the rate of fuel burned. Heating value shall be determined in accordance with methods specified by the Department. The rate of fuel burned during each testing period shall be determined by suitable methods and shall be confirmed by a material balance over the affected facility.

(g) For each run, emissions expressed in g/million cal shall be determined by dividing the emission rate in g/hr by the heat input. The emission rate shall be determined by the equation g/hr = Qs x C where Qs = volumetric flow rate of the total effluent in dscm/hr as determined for each run.

1. For particulate matter, C = particulate concentration in g/dscm.

2. For SO_2, C = SO_2 concentration in g/dscm.

3. For NO_x, C = NO_x concentration in g/dscm.

Section 5. Standards of Performance for Portland Cement Plants

(1) Applicability

The provisions of the section shall apply to the following affected facilities in portland cement plants commenced on or after April 9, 1972 : kiln, clinker cooler, raw mill system, finish mill system, raw mill dryer, raw material storage, clinker storage, finished product storage, conveyor transfer points, bagging and bulk loading and unloading systems.

(3) Standard for Particulate Matter.

(a) On and after the date on which the performance test required to be conducted by Subsection 1(3) of this regulation is completed, no owner or operator subject to the provisions of this section shall cause to be discharged into the atmosphere from any kiln any gases which:

2. Exhibit greater than twenty (20) percent opacity.

(b) On and after the date on which the performance test required to be conducted by Subsection 1(3) is completed, no owner or operator subject to the provisions of this section shall cause to be discharged into the atmosphere from any clinker cooler any gases which:

2. Exhibit ten (10) percent opacity, or greater.

(c) On and after the date on which the performance test required to be conducted by Subsection 1(3) of this regulation is completed, no owner or operator subject to the provisions of this section shall cause to be discharged into the atmosphere from any affected facility other than the kiln and clinker cooler any gases which exhibit ten (10) percent opacity, or greater.

(5) Test Methods and Procedures.

(a) The reference methods as defined in Subsection 1(2)(j), except as provided for in Subsection 1(3)(b) of this regulation, shall be used to determine compliance with the standards prescribed in Subsection (3) of this section.

Section 6. Standards of Performance for Nitric Acid Plants

(1) Applicability

The provisions of this section shall apply to each nitric acid production unit commenced on or after April 9, 1972, which is the affected facility.

(3) Standard for Nitrogen Oxides.

On and after the date on which the performance test required to be conducted by Subsection 1(3) of this regulation is completed, no owner or operator subject to the provisions of this regulation shall cause to be discharged into the atmosphere from any affected facility any gases which:

(a) Contain nitrogen oxides, expressed as NO_2, in excess of 1.5 kg per metric ton of acid produced (3.0 lb per ton), the production being expressed as 100 percent nitric acid.

(b) Exhibit ten (10) percent opacity, or greater. Where the presence of uncombined water is the only reason for failure to meet the requirements of this paragraph, such failure will not be a violation of this section.

(4) Emission Monitoring

(a) There shall be installed, calibrated, maintained, and operated, in any nitric acid production unit subject to the provisions of this section, an instrument for continuously monitoring and recording emissions of nitrogen oxides.

(b) The instrument and sampling system installed and used pursuant to this subsection shall be capable of monitoring emission levels within ±20 percent with a confidence level of ninety-five (95) percent and shall be calibrated in accordance with the method(s) prescribed by the manufacturer(s) of such instrument, the instrument shall be subjected to manufacturers recommended zero adjustment and calibration procedures at least once per twenty-four (24) hour operating period unless the manufacturer(s) specifies or recommends calibration at shorter intervals, in which case such specifications or recommendations shall be followed. The applicable method specified by the Department shall be the reference method.

(c) Production rate and hours of operation shall be recorded daily.

(5) Test Methods and Procedures

(a) The reference methods as defined in Subsection 1(2)(j), except as provided for in Subsection 1(3)(b) of this regulation, shall be used to determine compliance with the standard prescribed in Subsection (3) of this section.

(b) The sampling point shall be the centroid of the stack or duct or at a point no closer to the walls than 1 m (3.28 ft). Each run shall consist of at least four (4) grab samples taken at approximately fifteen (15) minute intervals. The arithmetic mean of the samples shall constitute the run value. A velocity traverse shall be performed once per run.

(c) Acid production rate, expressed in metric tons per hour of 100 percent nitric acid, shall be determined during each testing period by suitable methods and shall be confirmed by a material balance over the production system.

(d) For each run, nitrogen oxides, expressed in g/metric ton of 100 percent nitric acid, shall be determined by dividing the emission rate in g/hr by the acid production rate. The emission rate shall be determined by the equation,

$$g/hr = Q_s \times c$$

where Q_s = volumetric flow rate of the effluent in dscm/hr, and c = NO_x concentration in g/dscm.

Section 7. Standards of Performance for Sulfuric Acid Plants

(1) Applicability

The provisions of this section shall apply to each sulfuric acid production unit commenced on or after April 9, 1972, which is the affected facility.

(3) Standard for Sulfur Dioxide

On and after the date on which the preformance test required to be conducted by Subsection 1(3) of this regulation is completed, no owner or operator subject to the provisions of this section shall cause to be discharged into the atmosphere from any affected facility any gases which contain sulfur dioxide in excess of 2 kg per metric ton of acid produced (4 lb. per ton), the production being expressed as 100 percent H_2SO_4.

(4) Standard for Acid Mist.

On and after the date on which the performance test required to be conducted by Subsection 1(3) is completed, no owner or operator subject to the provisions of this section shall cause to be discharged into the atmosphere from any affected facility any gases which:

(a) Contain acid mist, expressed as H_2SO_4, in excess of 0.075 kg per metric ton of acid produced (0.15 lb per ton), the production being expressed as 100 percent H_2SO_4.

(b) Exhibit ten (10) percent opacity, or greater. Where the presence of uncombined water is the only reason for failure to meet the requirements of this paragraph, such failure will not be a violation of this subsection.

(5) Emission Monitoring.

(a) There shall be installed, calibrated, maintained, and operated, in any sulfuric acid production unit subject to the provisions of this section, an instrument for continuously monitoring and recording emissions of sulfur dioxide.

(b) The instrument and sampling system installed and used pursuant to this subsection shall be capable of monitoring emission levels within ±20 percent with a confidence level of ninety-five (95) percent and shall be calibrated in accordance with the method(s) prescribed by the manufacturer(s) of such instrument, the instrument shall be subject to manufacturers recommended zero adjustment calibration procedures at least once per twenty-four (24) hour operating period unless the manufacturer(s) specified or recommends calibration at shorter intervals, in which case such specifications or recommendations shall be followed. The applicable method specified by the Department shall be the reference method.

(c) Production rate and hours of operation shall be recorded daily.

(6) Test Methods and Procedures

(a) The reference methods as defined in Subsection 1(2)(j), except as provided for in Subsection 1(3)(b) of this regulation, shall be used to determine compliance with the standards prescribed in Subsections (3) and (4) of this section.

(b) The moisture content can be considered to be zero. For determination of sulfur dioxide and acid mist the sampling time for each run shall be at least sixty (60) minutes and the minimum sample volume shall be 1.15 dscm (40.6 dscf) except that smaller sampling times or sample volumes, when necessitated by process variables or other factors, may be approved by the Department.

(c) Acid production rate, expressed in metric tons per hour of 100 percent H_2SO_4, shall be determined during each testing period by suitable methods and shall be confirmed by a material balance over the production system.

(d) Acid mist and sulfur dioxide emissions, expressed in g/metric ton of 100 percent H_2SO_4 shall be determined by dividing the emission rate in g/hr by the acid production rate. The emission rate shall be determined by the equation, g/hr = Q_s X c, where Q_s = volumetric flow rate of the effluent in dscm/hr, and c = acid mist and SO_2 concentrations in g/dscm.

Section 8. Standards of Performance for Asphalt Concrete Plants

(1) Applicability

The provisions of this section shall apply to each asphalt concrete plant commenced on or after the effective date of this regulation, which is the affected facility. For the purpose of this section, an asphalt concrete plant is comprised only of any combination of the following: Dryers; systems for screening, handling, storing, and weighing hot aggregate; systems for loading, transferring, and storing mineral filler; systems for mixing asphalt concrete; and the loading, transfer and storage systems associated with emission control systems.

(3) Standard for Particulate Matter

(a) On and after the date on which the performance test required to be conducted by Subsection 1(3) of this regulation is completed, no owner or operator subject to the provisions of this section shall discharge or cause the discharge into the atmosphere from any affected facility any gases which:

2. Exhibit twenty (20) percent opacity, or greater. Where the presence of uncombined water is the only reason for failure to meet the requirements of this paragraph, such failure shall not be a violation of this subsection.

(4) Test Methods and Procedures

(a) The reference methods as defined in Subsection 1(2)(j), except as provided for in Subsection 1(3)(b) of this regulation, shall be used to determine compliance with the standards prescribed in Subsection (3) of this section as follows.

Section 9. Standards of Performance for Petroleum Refineries

(1) Applicability

The provisions of this section shall apply to the following affected facilities in petroleum refineries commenced on or after the effective date of this regulation: Fluid catalytic cracking unit catalyst regenerators, fluid catalytic cracking unit incinerator-waste heat boilers, and fuel gas combustion devices.

(3) Standard for Particulate Matter.

(a) On and after the date on which the performance test required to be conducted by Subsection 1(3) of this regulation is completed, no owner or operator subject to the provisions of this section shall discharge or cause the discharge into the atmosphere from any fluid catalytic cracking unit catalyst regenerator or from any fluid catalytic cracking unit incinerator-waste heat boiler:

2. Gases exhibiting thirty (30) percent opacity or greater, except for three (3) minutes in any one (1) hour. Where the presence of uncombined water is the only reason for failure to meet the requirements of this paragraph, such failure shall not be a violation of this subsection.

(5) Standard for Sulfur Dioxide.

(a) On and after the date on which the performance test required to be conducted by Subsection 1(3) of this regulation is completed, no owner or operator subject to the provisions of this section shall burn in any fuel gas combustion device any fuel gas which contains H_2S in excess of 230 mg/dscm (0.10 gr/dscf), except as provided in Paragraph (b) of this subsection. The combustion of process upset gas in a flare, or the combustion in a flare of process gas or fuel gas which is released to the flare as a result of relief valve leakage, is exempt from this paragraph.

(b) The owner or operator may elect to treat the gases resulting from the combustion of fuel gas in a manner which limits the release of SO_2 to the atmosphere if it is shown to the satisfaction of the Department that this prevents SO_2 emissions as effectively as compliance with the requirements of Paragraph (a) of this subsection.

(6) Emission Monitoring

(a) The owner or operator of any petroleum refinery subject to the provisions of this section shall install, calibrate, maintain, and operate monitoring instruments as follows:

1. A photoelectric or other type smoke detector and recorder to continuously monitor and record the opacity of gases discharged into the atmosphere from fluid catalytic cracking unit catalyst regenerator.

2. An instrument for continuously monitoring and recording the concentration of CO in gases discharged into the atmosphere from fluid catalytic cracking unit catalyst regenerators, except where the requirements of Paragraph (a) 3 of this subsection are met.

3. Instruments for continuously monitoring and recording firebox temperature and O_2 concentration in the exhaust gases from any incinerator-waste heat boiler which combusts the exhaust gases from a fluid catalytic cracking unit catalyst regenerator except where the requirements of Paragraph (a) 2 of this subsection are met.

4. An instrument for continuously monitoring and recording concentrations of H_2S in fuel gases burned in any fuel gas combustion device, except where the requirements of Subsection (5)(b) of this section are met. Fuel gas combustion devices have a common source of fuel gas may be monitored at one location if sampling at this location produces results representative of the H_2S concentration in the fuel gas burned.

5. An instrument for continuously monitoring and recording concentrations of SO_2 in the gases discharged into the atmosphere from the combustion of fuel gases except where the requirements of Subsection (5)(a) of this section are met.

(b) Instruments and sampling systems installed and used pursuant to this subsection shall meet specifications prescribed by the Department and each instrument shall be calibrated in accordance with the method prescribed by the manufacturer of such instrument. The instruments shall be subjected to the manufacturer's recommended zero adjustment and calibration procedures at least once per twenty-four (24) hour operating period unless the manufacturer specifies or recommends calibration at shorter intervals, in which case such specification or recommendations shall be followed.

(e) For the purpose of reports pursuant to Section 8 of 401 KAR 3:010, periods of excess emissions that shall be reported are defined as follows:

1. Opacity. All hourly periods in which there are four (4) or more one (1) minute periods during which the average opacity of the gases discharged into the atmosphere from any fluid catalytic cracking unit catalyst regenerator subject to Subsection (3) of this section exceeds thirty (30) percent.

2. Carbon Monoxide. All hourly periods during which the average carbon monoxide concentration in the gases discharged into the atmosphere from any fluid catalytic cracking unit catalyst regenerator subject to Subsection (4) of this section exceeds 0.050 percent by volume; or any hourly period in which O_2 concentration and firebox temperature measurements indicate that the average concentration of CO in the gases discharged into the atmosphere exceeds 0.050 percent by volume for sources which combust the exhaust gases from any fluid catalytic cracking unit catalyst regenerator subject to Subsection (4) of this section in an incinerator-waste heat boiler and for which the owner or operator elects to monitor in accordance with Subsection (6)(a)3 of this section.

3. Hydrogen Sulfide. All hourly periods during which the average hydrogen sulfide content of any fuel gas combusted in any fuel gas combustion device subject to Subsection (5) of this section exceeds 230 mg/dscm (0.10 gr/dscf) except where the requirements of Subsection (5)(b) of this section are met.

4. Sulfur Dioxide. All hourly periods during which the average sulfur dioxide emissions discharged into the atmosphere from any fuel gas combustion device subject to Subsection (5) of this section exceed the level specified in Subsection (5)(b) of this section, except where the requirements of Subsection (5)(a) of this section are met.

(7) Test Methods and Procedures

(a) For the purpose of determining compliance with Subsection (3) (a) of this section, the reference methods and calculation procedures prescribed by United States Environmental Protection Agency Regulations on Standards of Performance for New Stationary Sources (40 CFR 60) shall be used.

(b). For determining concentration of particulate matter release to the atmosphere from the fluid catalytic cracking unit catalyst regenerator, the sampling time for each run shall be at least sixty (60) minutes and the sampling rate shall be at least 0.015 dscm/min (0.53 dscf/min), except that shorter sampling times may be approved by the Department when process variables or other factors preclude sampling for at least sixty (60) minutes.

(c) For exhaust gases from the fluid catalytic cracking unit catalyst regenerator prior to the emission control system: the integrated sample techniques for gas analysis and moisture content determination, respectively;

(d) For each run, emissions expressed in kg/1000 kg (English units: lb/1000 lb) of coke burn-off in the catalyst regenerator shall be determined.

(e) In those instances in which auxiliary liquid or solid fuels are burned in an incinerator-waste heat boiler, the rate of particulate matter emissions permitted under Subsection (3) (b) of this section must be determined. Auxiliary fuel heat input, expressed in millions of cal/hr (English units: Millions of BTU/hr) shall be calculated for each run by fuel flow rate measurement and analysis of the liquid or solid auxiliary fuels. For each run, the rate of particulate emissions permitted under Subsection (3)(b) of this section shall be calculated from an equation prescribed in 40 CFR 60 .

(f) For the purpose of determining compliance with Subsection (4) of this section, the integrated sample technique shall be used. The sample shall be extracted at a rate proportional to the gas velocity at a sampling point near the centroid of the duct. The sampling time shall not be less than sixty (60) minutes.

(g) For the purpose of determining compliance with Subsection (5)(a) of this section, the reference method shall be used. When refinery fuel gas lines are operating at pressures substantially above atmospheric, the gases sampled must be introduced into the sampling train at approximately atmospheric pressure. This may be accomplished with a flow control valve. If the line pressure is high enough to operate the sampling train without a vacuum pump, the pump may be eliminated from the sampling train. The sample shall be drawn from a point near the centroid of the fuel gas line. The minimum sampling time shall be ten (10) minutes and the minimum sampling volume 0.01 dscm (0.35 dscf) for each sample. The arithmetic average of two samples shall constitute one (1) run. Samples shall be taken at approximately one (1) hour intervals. For the most fuel gases, sample times exceeding twenty (20) minutes may result in depletion of the collecting solution, although fuel gases containing low concentrations of hydrogen sulfide may necessitate sampling for longer periods of time.

(h) The method prescribed in 40 CFR 60 shall be used for determining concentration of SO_2 in determining compliance with Subsection (5)(b) of this section, except that H_2S concentration of the fuel gas may be determined instead. The sampling site for determining SO_2 concentration shall be the same as for determining volumetric flow rate. The sampling point in the duct for determining SO_2 concentration shall be at the centroid of the cross section if the cross sectional area is less than five (5) square meters (54 square feet) or at a point no closer to the walls than one (1) meter (39 inches) if the cross sectional area is five (5) square meters or more and the centroid is more than one (1) meter from the wall. The sample shall be extracted at a rate proportional to the gas velocity at the sampling point. The minimum sampling time shall be ten (10) minutes and the minimum sampling volume 0.01 dscm (0.35 dscf) for each sample. The arithmetic average of two (2) samples shall constitute one (1) run. Samples shall be taken at approximately one (1) hour intervals.

Section 11. Standards of Performance for Secondary Lead Smelters

(1) Applicability

The provisions of this section shall apply to the following affected facilities in secondary lead smelters which commenced on or after the effective date of this regulation: Pot furnaces of more than 250 kg (550 lb) charging capacity, blast (cupola) furnaces, and reverberatory furnaces.

(3) Standard for Particulate Matter.

(a) On and after the date on which the performance test required to be conducted by Subsection 1(3) of this regulation is completed, no owner or operator subject to the provisions of this section shall discharge or cause the discharge into the atmosphere from a blast (cupola) or reverberatory furnace any gases which:

2. Exhibit twenty (20) percent opacity or greater.

(b) On and after the date on which the performance test required to be conducted by Subsection 1(3) of this regulation is completed, no owner or operator subject to the provisions of this section shall discharge or cause the discharge into the atmosphere from any pot furnace any gases which exhibit ten (10) percent opacity or greater.

(4) Test Methods and Procedures.

(a) The reference methods as defined in Subsection 1 (2) (j), except as provided for in Subsection 1(3)(b) of this regulation, shall be used to determine compliance with the standards prescribed in Subsection (3) of this section.

Section 12. Standards of Performance for Secondary Brass and Bronze Ingot Production Plants

(1) Applicability

The provisions of this section shall apply to the following affected facilities in secondary brass or bronze ingot production plants which commenced on or after the effective date of this regulation: Reverberatory and electric furnaces of 1,000 kg (2,205 lb) or greater production capacity and blast (cupola) furnaces of 250 kg/hr (550 lb/hr) or greater production capacity.

(3) Standard for Particulate Matter

(a) On and after the date on which the performance test required to be conducted by Subsection 1(3) of this regulation is completed, no owner or operator subject to the provisions of this section shall discharge or cause the discharge into the atmosphere from a reverberatory furnace any gases which:

2. Exhibit twenty (20) percent opacity or greater.

(b) On and after the date on which the performace test required to be conducted by Subsection 1(3) of this regulation is completed, no owner or operator subject to the provisions of this section shall discharge or cause the discharge into the atmosphere from any blast (cupola) or electric furnace any gases which exhibit ten (10) percent opacity or greater.

(4) **Test Methods and Procedures.**

(a) The reference methods as defined in Subsection 1 (2) (j) except as provided for in Subsection 1(3)(b) of this regulation, shall be used to determine compliance with the standards prescribed in Subsection (3) of this section.

Section 14. Standards of Performance for Sewage Treatment Plants

(1) Applicability

The provisions of this section shall apply to each incinerator commenced on or after the effective date of this regulation which burns the sludge produced by municipal sewage treatment facilities.

(3) Standard for Particulate Matter.

(a) On and after the date on which the performance test required to be conducted by Subsection 1(3) of this regulation is completed, no owner or operator of any sewage sludge incinerator subject to the provisions of this section shall discharge or cause the discharge into the atmosphere of:

2. Any gases which exhibit twenty (20) percent opacity or greater. Where the presence of uncombined water is the only reason for failure to meet the requirements of this paragraph, such failure shall not be a violation of this subsection.

(b) For determing the concentration of particulate matter and the associated moisture content, the sampling for each run shall continue for an integral number of cycles with total duration of at least sixty (60) minutes. The sampling rate shall be at least 0.9 dscm/hr (0.53 dscf/min) except that shorter sampling times, when necessitated by process variables or other factors, may be approved by the Department. A cycle shall start at the beginning of either the scrap preheat or the oxygen blow and shall terminate immediately prior to tapping.

Section 16. Standards of Performance for Kraft (Sulfate) Pulp Mills

(1) Applicability

The provisions of this section shall apply to recovery furnaces, lime kilns, and dissolving smelt tanks, commenced on or after April 9, 1972, which are the affected facilities.

(4) Standard for Total Reduced Sulfur (TRS)

(a) No person shall cause, suffer, allow, or permit total reduced sulfur emissions from the recovery furnace of any affected facility in excess of an exit stack gas concentration of 15 parts per million by volume as a daily arithmethic average.

(b) No person shall cause, allow, or permit total reduced sulfur emissions from the recovery furnace of any affected facility in excess of an exit stack gas concentration of forty (40) parts per million by volume for more than sixty (60) total minutes in any twenty-four (24) hour period.

(c) No person shall cause, suffer, allow, or permit the emission of various noncondensable gas streams from digester relief, blow tank relief evaporator hot wells, or multiple effect evaporators containing total reduced sulfur in any affected facility unless treated by thermal oxidation or an equivalent method.

(d) Control of other points of emission of total reduced sulfur, shall be considered on an individual basis as determined by the Department.

Section 17. Standards of Performance for Sulfite Pulp Mills

(1) Applicability

The provisions of this section shall apply to the total sulfite pulp mill commenced on or after April 9, 1972 which is the affected facility.

(3) Standards for Sulfur Oxides Emissions. No person shall cause or permit sulfur oxides emissions from blow pits, washer vents, storage tanks, digester relief, recovery system, etc., to exceed 9.0 lb. per air dried ton of pulp produced.

Section 2. Standards of Performance for Incinerators

(1) Applicability

The provisions of this section are applicable to each incinerator with a capacity of 2.5 cubic feet or greater, which is the affected facility, and which was in being or under construction before April 9, 1972.

(b) No person shall cause, suffer, allow or permit the emission produced by the incineration of sawdust, wood chips, or bark which:

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(3) Standard for Particulate Matter

(a) No person shall cause, suffer, allow, or permit the emission produced by the incineration of any substance other than sawdust, wood chips, or bark which:

1. Is greater than twenty (20) percent opacity; or,

1. Is equal to or greater than forty (40) percent opacity, except that an emission equal to or greater than forty (40) percent opacity shall be permissible for not more than one (1) hour in any eight (8) hour period; or,

Section 3. Standards of Performance for Indirect Heat Exchangers

(1) Applicability

The provisions of this section are applicable to each indirect heat exchanger of more than one (1) million BTU per hour heat input or of more than fifty (50) million BTU per hour heat input if natural gas, liquid petroleum gas, distillate fuel oil or combination of these as a main or standby fuel, is burned which is the affected facility. The standard for particulate matter is applicable to each affected facility which was in being or under construction before April 9, 1972. The standard for sulfur dioxide is applicable to each affected facility which was in being or under construction before the effective date of this regulation. The combined total heat input capacity of all affected facilities shall be used to determine the total allowable emissions from a source.

(3) Standard for Particulate Matter

(a) No person shall cause, suffer, allow or permit the emission into the open air of particulate matter from any indirect heat exchanger in a region classified as Priority I with respect to particulate matter which is greater than twenty (20) percent opacity.

(b) No person shall cause, suffer, allow or permit the emission into the open air of particulate matter from any indirect heat exchanger in a region classified as Priority II or Priority III with respect to particulate matter which is greater than forty (40) percent opacity.

(c) The provisions of Subsections (1) and (2) shall not apply to:

1. Emissions into the open air of particulate matter from any indirect heat exchanger during building a new fire, cleaning the fire box, or blowing soot, for a period or periods aggregating not more than:

   a. Two (2) minutes in any sixty (60) minutes which is less than or equal to forty (40) percent opacity for indirect heat exchangers described in Subparagraph (a);

      Six (6) minutes in any sixty (60) minutes which is less than or equal to sixty (60) percent opacity for indirect heat exchangers described in Subparagraph (b).

2. During emergency conditions caused by an unavoidable breakdown provided the Department is notified promptly.

3. Emissions from each waterwall indirect heat exchanger during startup operations.

(4) Standard for sulfur dioxide

(a) The maximum allowable emission of sulfur dioxide from indirect heat exchangers shall be in accordance with a system of priorities as specified in paragraph (b) of this subsection. The classifications shall be delineated on a county basis. The maximum allowable emission for the various classes is specified in paragraph (d) of this subsection.

(b) The class into which a given county falls has been determined by mathematical atmospheric diffusion models and other methods which evaluate those factors which necessitate limits on sulfur dioxide emissions. These factors include but were not limited to:

1. Total sulfur dioxide emissions;
2. Spatial distribution of sulfur dioxide sources;
3. Effects of single large sources;
4. Existing measured air quality;
5. Topographical features of the county;
6. Contribution to background levels;

(c) The following classifications will be effective upon the effective date of this regulation:

1. Class I: Jefferson County, McCracken County;
2. Class II: Bell County, Clark County, Woodford County;
3. Class III: Pulaski County;
4. Class IV: Muhlenberg County, Webster County, Hancock County;
5. Class V: All other counties.

(d) No person shall cause, suffer, allow or permit the emission of sulfur dioxide into the open air from any existing indirect heat exchanger, in various counties if the sulfur dioxide emitted exceeds the quantity specified in Table 2 which is incorporated as part of this regulation.

(e) When different fuels are burned simultaneously in any combination, the applicable standard shall be determined by proration using the following formula:

$$\text{Allowable } SO_2 \text{ emission, lb/MM BTU} = \frac{y\,(a) + z\,(b)}{y + z}$$

Where:

y is the percent of total heat input derived from liquid fuel,

z is the percent of total heat input derived from solid fuel,

a is the allowable sulfur dioxide emission in pounds per million BTU heat input derived from liquid fuel, and

b is the allowable sulfur dioxide emission in pounds per million BTU heat input derived from solid fuel.

TABLE 2

ALLOWABLE SULFUR DIOXIDE EMISSIONS BASED ON HEAT INPUT CAPACITY

MM BTU/HOUR HEAT INPUT (Fuel:)	ALLOWABLE EMISSION POUND/MM BTU									
	COUNTIES CLASS I		COUNTIES CLASS II		COUNTIES CLASS III		COUNTIES CLASS IV		COUNTIES CLASS V	
	LIQUID	SOLID	LIQUID	SOLID	LIQUID	SOLID	LIQUID	SOLID	LIQUID	SOLID
10 or less	3.0	5	4.0	6.0	4.6	7.0	5.4	8.0	6.0	9.0
50	1.5	2.4	2.2	3.3	3.1	4.7	4.3	6.4	4.9	7.3
100	1.2	1.8	1.7	2.5	2.6	4.0	4.0	5.9	4.5	6.7
150	1.0	1.5	1.5	2.2	2.4	3.6	3.7	5.6	4.3	6.4
200	0.9	1.3	1.3	2.0	2.2	3.4	3.6	5.4	4.1	6.2
250 or greater	0.8	1.2	1.2	1.8	2.1	3.2	3.5	5.2	4.0	6.0

Interpolation of allowable emissions for rated capacity values between 10 and 250 million BTU heat input may be accomplished by use of the equations shown below for the appropriate fuel specified. In all equations Y = allowable sulfur dioxide emission in pounds per million BTU heat input and X = millions of BTU per hour heat input capacity rating.

COUNTY CLASS	FUEL ALLOWABLE (Pounds/MM BTU)
I	Liquid $Y = 7.7223\ X^{-0.4106}$ Solid $Y = 13.8781\ X^{-0.4434}$
II	Liquid $Y = 9.4644\ X^{-0.3760}$ Solid $Y = 14.1967\ X^{-0.3760}$
III	Liquid $Y = 8.060\ X^{-0.2436}$ Solid $Y = 12.2539\ X^{-0.2432}$
IV	Liquid $Y = 7.3639\ X^{-0.1347}$ Solid $Y = 10.8875\ X^{-0.1338}$
V	Liquid $Y = 8.0189\ X^{-0.1260}$ Solid $Y = 12.0284\ X^{-0.1260}$

(f) Compliance shall be based on the total heat input from all fuels burned, including gaseous fuels.

(g) Each affected facility not presently in compliance with this section shall submit a control plan and compliance schedule no later than January 1, 1976 with a final compliance date no later than July 1, 1977.

(4) Emission and Fuel Monitoring

(a) There shall be installed, calibrated, maintained, and operated, in any indirect heat exchanger of more than 250 million BTU per hour heat input subject to the provisions of this section, emission monitoring instruments as follows:

1. A photoelectric or other type smoke detector and recorder, except where gaseous fuel is the only fuel burned.

2. An instrument for continuously monitoring and recording sulfur dioxide emissions, except where gaseous fuel is the only fuel burned, or where compliance is achieved through low sulfur fuels and representative sulfur analysis of fuels are conducted daily in accordance with Paragraph (c) or (d) of this subsection.

(b) Instruments and sampling systems installed and used pursuant to this section shall be capable of monitoring emission levels within ± 20 percent with a confidence level of 95 percent and shall be calibrated in accordance with the method(s) prescribed by the manufacturer(s) of such instruments; instruments shall be subjected to manufacturers recommended zero adjustment and calibration procedures at least once per twenty-four (24) hour operating period unless the manufacturer(s) specifies or recommends calibration at shorter intervals, in which case such specifications or recommendations shall be followed. The applicable method specified by the Department shall be the reference method.

(c) The sulfur content of solid fuels, as burned, shall be determined in accordance with the methods specified by the Department.

(d) The sulfur content of liquid fuels, as burned, shall be determined in accordance with the methods specified by the Department.

(e) The rate of fuel burned for each fuel shall be measured daily or at shorter intervals and recorded. The heating value and ash content of fuels shall be ascertained at least once per week and recorded. Where the steam generating unit is used to generate electricity, the average electrical output and the minimum and maximum hourly generation rate shall be measured and recorded daily.

(f) The owner or operator of any indirect heat exchanger of more than 250 million BTU per hour heat input subject to the provisions of this section shall maintain a file of all measurements required by this regulation. Appropriate measurements shall be reduced to the units of the applicable standard daily, and summarized monthly. The record of any such measurement(s) and summary shall be retained for at least two (2) years following the date of such measurements and summaries.

(g) The Department may require for any indirect heat exchanger of less than 250 million BTU per hour heat input any or all the emission and fuel monitoring required by this subsection.

(h) A source may elect, with approval from the Department, to perform periodic source sampling in lieu of installing continuous emission monitoring instruments. In no case shall the frequency of sampling be less than once per calendar quarter.

Section 4. Standards of Performance for Process Operations

(1) Applicability

The provisions of this section shall apply to each process operation not otherwise regulated by other sections of this regulation and which was in being or under construction before the effective date of this regulation.

(3) Standard for Particulate Matter

(a) No person shall cause, suffer, allow or permit the emission into the open air of particulate matter from affected facility, or from all air pollution control equipment installed on any affected facility which:

Section 5. Standards of Performance for Kraft (Sulfate) Pulp Mills

(1) Applicability

The provisions of this section shall apply to recovery furnaces, lime kilns, and dissolving smelt tanks which were in being or under construction before April 9, 1972.

KENTUCKY

SECTION 4

(4) Standard for Total Reduced Sulfur (TRS)

(a) No person shall cause, suffer, allow, or permit total reduced sulfur emissions from the recovery furnace of any kraft pulp mill in excess of an exit stack gas concentration of fifteen (15) parts per million by volume as a daily arithmethic average.

(b) No person shall cause, allow, or permit total reduced sulfur emissions from the recovery furnace of any kraft pulp mill in excess of an exit stack gas concentration of forty (40) parts per million by volume for more than sixty (60) total minutes in any twenty-four (24) hour period.

(c) No person shall cause, suffer, allow, or permit the emission of various noncondensable gas streams from digester relief, blow tank relief evaporator hot wells, or multiple effect evaporators containing total reduced sulfur in a kraft pulp mill unless treated by thermal oxidation or an equivalent method with ninety-eight (98) percent efficiency.

(d) Control of other points of emission of total reduced sulfur, shall be considered on an individual basis as determined by the Department.

Section 6. Standards of Performance for Sulfite Pulp Mills

(1) Applicability

The provisions of this section shall apply to the total sulfite pulp mill which was in being or under construction before April 1972.

(3) Standard for Sulfur Oxides Emissions

No person shall cause or permit sulfur oxides emissions from blow pits, washer vents, storage tanks, digester relief, recovery system, etc., to exceed 9.0 lb. per air dried ton of pulp produced.

Section 7. Standards of Performance for Sulfuric Acid Plants

(1) Applicability

The provisions of this section shall apply to existing installations of sulfuric acid plants which were in being or under construction before April 9, 1972.

KENTUCKY

SECTION 7

(3) Standard for Particulate Matter

No person shall cause suffer, allow, or permit the following emission into the open air:

(a) Sulfuric acid mist in the effluent in excess of 0.90 pound per ton of acid (100%) produced;

(b) A visible emission which is greater than twenty (20) percent opacity.

(4) Standard for Sulfur Dioxide

No person shall cause, suffer, allow or permit the following emission into the open air: Sulfur dioxide in the effluent in excess of 27.6 pounds per ton of acid (100%) produced.

(5) Emission Monitoring

(a) There shall be installed, calibrated, maintained, and operated, in any sulfuric acid production unit subject to the provisions of this section, an instrument for continuously monitoring and recording emissions of sulfur dioxide.

(b) The instrument and sampling system installed and used pursuant to this subsection shall be demonstrated to be capable of monitoring emission levels within ± 20 percent with a confidence level of 95 percent through comparison with an appropriate wet test method, and shall be calibrated in accordance with the method(s) prescribed by the manufacturer(s) of such instrument, the instrument shall be subject to manufactures recommended zero adjustment calibration procedures at least once per twenty-four (24) hour operating period unless the manufacturer(s) specifies or recommends calibration at shorter intervals, in which case such specifications or recommendations shall be followed. The applicable method specified by the Department shall be the reference method.

(c) Production rate and hours of operation shall be recorded daily.

(d) The owner or operator of a sulfuric acid plant subject to the provisions of this section shall maintain a file of all measurements required by this regulation. Appropriate measurements shall be reduced to the units of the applicable standard daily, and summarized monthly. The record of any such measurement(s) and summary shall be retained for at least two (2) years following the date of such measurements and summaries.

Section 8. Standards of Performance for Process Gas Streams

(1) Applicability

The provisions of this section shall apply to petroleum refineries, by-product coke plants, and any other process, located in a region classified as Priority I with respect to sulfur dioxide and which were in being or under construction before April 9, 1972.

(3) Standard for Hydrogen Sulfide

No person shall cause, suffer, allow or permit the emission of H_2S in a process gas stream to exceed ten (10) grains per 100 cubic feet of gas.

(4) Standard for Sulfur Dioxide

No person shall cause, suffer, allow, or permit the emission of sulfur dioxide in a process gas stream to exceed 2000 parts per million by volume.

Section 16. Standard of Performance for Nitric Acid Plants

(1) Applicability.

The provisions of this section shall apply to any nitric acid plant in being or under construction before April 9, 1972; which is the affected facility.

(3) Standard for Nitrogen Oxides

On and after the date on which the performance test required to be conducted by Section 1 (3) of this regulation is completed, no owner or operator subject to the provisions of this regulation shall cause to be discharged into the atmosphere from any affected facility any gases which:

(a) Contain nitrogen oxides, expressed as NO_2, in excess of 2.9 kg per metric ton of acid produced (5.8 lb. per ton), the production being expressed as 100 percent nitric acid.

(b) Exhibit ten (10) percent opacity, or greater. Where the presence of uncombined water is the only reason for failure to meet the requirements of this paragraph, such failure will not be a violation of this section.

(4) Emission Monitoring:

(a) There shall be installed, calibrated, maintained, and operated, in any nitric acid production unit subject to the provisions of this section, an instrument for continuously monitoring and recording emissions of nitrogen oxides.

(b) The instrument and sampling system installed and used pursuant to this subsection shall be capable of monitoring emission levels with ±20 percent with a confidence level of ninety-five (95) percent and shall be calibrated in accordance with the method(s) prescribed by the manufacturer(s) of such instrument, the instrument shall be subjected to manufacturers recommended zero adjustment and calibration procedures at least once per twenty-four (24) hour operating period unless the manufacturer(s) specifies or recommends calibration at shorter intervals, in which case such specifications or recommendations shall be followed. The applicable method specified by the department shall be the reference method.

(c) Production rate and hours of operation shall be recorded daily.

(5) Test Methods and Procedures:

(a) The reference methods specified by the department, except as provided for in Section 1 (3) (b) of this regulation, shall be used to determine compliance with the standard prescribed in Subsection (3) of this section.

(b) The sampling point shall be the centroid of the stack or duct or at a point no closer to the walls than 1 m (3.28 ft). Each run shall consist of at least four (4) grab samples taken at approximately fifteen (15) minute intervals. The arithmetic mean of the samples shall constitute the run value. A velocity traverse shall be performed once per run.

(c) Acid production rate, expressed in metric tons per hour of 100 percent nitric acid, shall be determined during each testing period by suitable methods and shall be confirmed by a material balance over the production system.

(d) For each run, nitrogen oxides, expressed in g/metric ton of 100 percent nitric acid, shall be determined by dividing the emission rate in g/hr by the acid production rate. The emission rate shall be determined by the equation,

$$g/hr = Q_s \times c$$

Where:

Q_s = volumetric flow rate of the effluent in dscm/hr, and

c = NO_x concentration in g/dscm.

THE LOUISIANA AIR CONTROL COMMISSION

REGULATIONS

AIR
QUALITY

Promulgated
2/20/78

*15.5.1 Total oxidants shall be measured by the method listed in Table 2, or by such other equivalent methods approved by the Department. The publications or their replacements listed in Table 2 are incorporated in these regulations by reference.

15.5.2 The sampling and analytical procedures employed and their numbers, duration, and location of samples to be taken to measure ambient levels of air contaminants shall be consistent with obtaining accurate results which are statistically significant and representative of the conditions being evaluated.

16.0 Control of Air Pollution from Nitrogen Oxides.

*16.1 Purpose. It is the purpose of this section to establish ambient air quality standards for the State of Louisiana for nitrogen oxides and to enumerate methods for measuring concentrations of nitrogen oxides in the ambient air.

16.2 Scope. This section is applicable to all nitrogen oxides, except nitrous oxide (N_2O), in the ambient air.

16.3 Degradation of Ambient Air Having Higher Quality than that Set Forth in this Section Restricted. As of the effective date of these regulations, all processes which currently result in higher ambient air quality than shown in Tables 1 and 1a shall be maintained at the higher process quality level or better unless it can be affirmatively demonstrated to the Commission that a change in quality is justifiable.

16.4 Concentrations of Nitrogen Oxides in Ambient Air Restricted.

16.4.1 The standards of ambient air quality listed in Tables 1 and 1a define the limits of air contamination by nitrogen oxides. No person or group of persons shall allow nitorgen oxides to become airborne in amounts which cause the ambient air quality standards to be exceeded. The limits stated include normal background levels.

*16.4.2 Nothing in any other part or section of these regulations shall in any manner be construed as authorizing or legalizing the emission of air contaminants in such a manner as prohibited by these regulations. For example, compliance with ambient air quality standards does not authorize emissions in excess of emission limitations.

16.5 Methods of Sampling and Analysis.

16.5.1 Nitrogen oxides shall be measured by the method listed in Table 2, or by such other equivalent methods approved by the Department. The publications or their replacements listed in Table 2 are incorporated in these regulations by reference.

16.5.2 The sampling and analytical procedures employed and their numbers, duration, and location of samples to be taken to measure ambient levels of air contaminants shall be consistent with obtaining accurate results which are statistically significant and representative of the conditions being evaluated.

Emission Standards

17.0 Source Emissions.

*17.1 Purpose. It is the purpose of these emission standards to set forth levels or air quality for the protection of public health and of public welfare from any known or anticipated adverse effects of air contaminants. These standards set forth a mechanism of achieving cleaner air and are not a permit for unnecessary degradation of air quality. Therefore, quality of emissions as of the effective date of these standards shall be maintained at the higher degree of quality unless it can be affirmatively demonstrated to the Commission that a change in quality is justifiable and will not be contrary to the purpose of these regulations.

*17.2 Scope. The emission standards as presented below pertain to all sources emitting to the atmosphere of the State of Louisiana.

17.3 Responsible Person to Have Tests Made. The Department may require any person responsible for the emission of air contaminants to make or have made tests to determine the emission of air contaminants from any source, whenever the Department has reason to believe that an emission in excess of that allowed by these regulations is occurring. The Department may specify testing methods to be used in accordance with good professional practice. The Department may observe the testing. All tests shall be conducted by reputable, qualified personnel. The Department shall be given a copy of the test results in writing and signed by the person responsible for the tests.

17.4 The Department May Make Tests. The Department may conduct tests of emissions of air contaminants from any source. Upon requests of the Department the person responsible for the source to be tested shall provide necessary sampling ports in stacks or ducts and such other safe and proper sampling and testing facilities, exclusive of instruments and sensing devices, as may be necessary for proper determination of the emission of air contaminants.

*17.5 New sources shall provide necessary sampling ports in stacks or ducts and such other safe and proper sampling and testing facilities, as may be necessary for proper determination of the emission of air contaminants.

**17.6 Emission Monitoring Requirements.

**17.6.1 Applicability. Source categories listed in Appendix "P" to Title 40, Part 51, of the Code of Federal Regulations (40 CFR Part 51) are to install, calibrate, operate, and maintain all monitoring equipment necessary for continuous monitoring the pollutants specified in the aforementioned appendix for the applicable source category. Sources affected by this paragraph shall complete the installation and performance tests of such equipment and begin monitoring and recording within eighteen months after the effective date of this regulation.

**17.6.1.1 Exemptions. Exemption from the requirement of 17.6.1 is hereby granted to any source which is subject to a new source performance standard promulgated in 40 CFR Part 60 and also to any source which is on a firm schedule for retirement within five years of the date of application of the monitoring requirement.

**17.6.2 Minimum Monitoring System Capability, Specifications, Data Reporting, and Data Reduction. Affected sources must meet at least the minimum requirements as set forth in 40 CFR Part 51, Appendix "P," paragraphs 2 through 5, unless such sources qualify for an exemption or alternative procedure contained therein.

**17.6.3 Special Consideration. The Commission can approve, on a case by case basis, alternative monitoring requirements, different from those in Section 17.6.2 above, if the original requirements cannot be implemented by a source due to physical plant limitations or extreme economic burden, or if the original requirements would not provide for accurate emission determination, or if the affected facility is infrequently operated. Such physical limitation or economic burden may be determined to exist only if the petitioner receives the concurrence from the Commission.

17.7 Variances.

*17.7.1 Where, upon written application of the responsible person or persons, the Technical Secretary finds that by reason of exceptional circumstances strict conformity with any provisions of these regulations would cause undue hardship, would be unreasonable, impractical or not feasible under the circumstances, the Technical Secretary may permit a variance from these regulations.

17.7.2 No variance may permit or authorize the maintenance of a nuisance, or a danger to public health or safety.

17.8 Circumvention. No person shall cause or permit the installation or use of any device or any means which, without resulting in reduction in the total amount of air contaminants emitted, conceals or dilutes an emission of air contaminants which would otherwise violate these regulations.

*17.9 To aid in controlling the overall levels of air contaminants in the atmosphere, air pollution control facilities should be installed whenever practically, economically, and technologically feasible. When facilities have been installed on a property they shall be used and diligently maintained in proper working order whenever any emissions are being made which can be controlled by the facilities, even though the ambient air quality standards in affected areas are not exceeded.

*17.10 No person or persons owning, leasing, renting or controlling the operation of any source of air contaminants shall cause, suffer, allow or permit emissions from their source of air contaminants which will result in "undesirable levels" as defined in Section 4.74 herein in the atmosphere over properties other than that of the person owning, leasing, renting or controlling the operation of such source.

**17.11 Notification Required. Pursuant to 6.1 the Department must be notified promptly of emergency occurrences or upsets that will substantially increase emissions. Immediate telephone notification should be followed promptly by written notification, within 7 calendar days, giving details of the occurrence and remedial actions. Timely and appropriate follow-up reports should be made detailing the methods or procedures to be used to prevent similiar atmospheric releases. Such notification does not imply the Technical Secretary will automatically grant an exemption to the source(s) of excessive emissions.

**17.12 Emission Inventory. An updated report must be submitted semiannually, if there has been any significant change in reported annual emission rates. A significant change is one in which the annual emission rate of any individual pollutant from any individual emission point changes more than ten percent from reported annual values.

**17.13 Reports. Reports must be made to the Department semiannually. These reports are to be submitted to the Department by January 20, and July 20. The report should include all data applicable to the emission source or sources which may be required under Section 6.10.2, 8.5.1 or 17.11 of the regulations. In any event, data should confirm the facility remained in compliance during the six month period or achieved the prescribed milestones to ultimately achieve compliance.

18.0 Control of Air Pollution from Smoke.

*18.1 It is the purpose of this regulation to establish emission standards on smoke to prevent undesirable levels of this air contaminant from occurring.

*18.2 Control of Smoke. The emission of smoke from any combustion unit (other than a flare, as described in Section 18.3 below) or from any type of burning in a combustion unit other than a flare), including the incineration of industrial, commercial, institutional and municipal wastes, shall be controlled so that the shade or appearance of the emission is not darker than No. 1 on the Ringelmann Smoke Chart (or of such opacity) as to obscure vision to a degree equivalent to the above except that emitted during the cleaning of a fire box or the building of a new fire, soot blowing or lancing, charging of an incinerator, equipment changes, ash removal and rapping of precipitators may be darker than No. 1 on the Ringelmann Smoke Chart (or the equivalent opacity) for a period or periods aggregating not more than four minutes in any sixty consecutive minutes.

*18.3 The emission of smoke from a flare or other similar device used for burning in connection with pressure valve releases and for control over process upsets shall be controlled so that the shade or appearance of the emission is not darker than No. 1 on the Ringelmann Smoke Chart more than an aggregate time of six hours in any ten consecutive days. If it appears the emergency cannot be controlled in six hours, the Commission shall be notified by the emitter as soon as possible after the start of the upset period. Such notification does not imply the Technical Secretary will automatically grant an exemption to the source(s) of excessive emissions.

18.4 The restrictions in 18.3 shall not apply during shutdown and start-up periods.

*18.5 The emission of smoke which passes onto or across a public road and creates a traffic hazard by impairment of visibility as defined in 4.34 or intensifies an existing traffic hazard condition is prohibited.

18.6 Exclusions from application of this section. The following matters are excluded from application of this section:

18.6.1 Emissions of smoke pursuant to and in compliance with the terms of a variance granted by the Commission.

*18.6.2 Emissions of smoke from an activity when both of the following conditions are met:

(a) The source of emissions is in a relatively unpopulated area of the state.

(b) The Commission determines it is not technically practicable nor economically reasonable to eliminate the emissions.

18.6.3 Where the presence of uncombined water is the only reason for failure of an emission to meet the requirements of Section 18.2 of this regulation, Section 18.2 will not apply.

*18.7 Any person claiming exclusion from the application of this section under this provision shall apply to the Commission through the Technical Secretary for exclusion in accordance with Section 2211 of the Act. The applicant shall furnish such information as the Commission may reasonably require to enable it to make a determination. The Commission may make such determination and apply such conditions as may be appropriate to the activity in question. A person granted an exclusion under this provision may be required to furnish the Commission with plans satisfactory to the Commission for implementing any reasonable control measures which may be developed or which otherwise become available.

19.0 Emission Standards for Particulate Matter.

19.1 Purpose. The purpose of this section shall be to limit the quantity of particulate matter emitted.

*19.2 Scope. This section applies to any operation, process, or activity from which particulate matter and/or suspended particulate matter is emitted except the wood pulping industry, the primary aluminum industry (horizontal stud Soderberg and prebake processes), and the burning of fuel for indirect heating in which the products of combustion do not come into direct contact with process materials.

*19.3 Control of Fugitive Emissions. All reasonable precautions shall be taken to prevent particulate matter and/or suspended particulate matter from becoming airborne. These precautions shall include but shall not be limited to the following:

(a) Use of water or chemicals for control of dust in the demolition of existing buildings or structures, construction operations, the grading of roads, or the clearing of land;

(b) Application of asphalt, oil, water, or suitable chemicals on dirt roads, materials stockpiles, and other surfaces which can give rise to airborne dusts;

(c) Installaton and use of dust collectors to enclose and vent the handling of dusty materials. Adequate containment methods shall be employed during sandblasting or other similar operations;

(d) Open bodied trucks transporting materials likely to give rise to airborne dust shall be covered at all times when in motion;

(e) Conducting agricultural practices such as tilling of land, application of fertilizers and insecticides in such a manner as to prevent dust from becoming airborne;

(f) Paving roadways and maintaining the roadways in a clean condition;

(g) The prompt removal of earth or other material from paved streets onto which earth or other material has been transported by trucking or earth moving equipment, errosion by water or other means.

19.4 General. The process weight rate per hour referred to in this section shall be based upon the normal operation maximum capacity of the equipment and if such normal maximum capacity should be increased by process or equipment changes, the new normal maximum capacity shall be used as the process weight in determining the allowable emissions.

*19.5 Emission Limitations. No person shall cause, suffer, allow, or permit the emission of particulate matter and/or suspended particulate matter to the atmosphere from any process or process equipment in excess of the amount shown in Table 3 for the process weight rate allocated to such source. The rate of emission shall be the total of all emission points from the source.

*19.5.1 Control of Particulate Matter and/or Suspended Particulate Matter. The emission of particulate matter and/or suspended particulate matter from any source other than new or existing fluid catalytic cracking unit incinerator-waste heat boilers shall be controlled so that the shade or appearance of the emission is not denser than twenty percent opacity; except that emitted may be denser than twenty percent opacity for a period or periods aggregating not more than four minutes in any sixty consecutive minutes.

For new or existing fluid catalytic cracking unit incinerator-waste heat boilers emissions shall not exceed thirty percent opacity except that emitted may be denser than thirty percent opacity for a period or periods aggregating not more than three minutes in any sixty consecutive minutes.

Emissions already less than that allowed by the process weight rate limitation (Table 3) will be considered by the Technical Secretary for exemption from the provisions of the subsection.

When the presence of uncombined water is the only reason for failure of an emission to meet the requirements of this subsection, this subsection will not apply.

*19.5.2 Variances. Where upon written application of the responsible person or persons the Technical Secretary finds that by reason of exceptional circumstances strict conformity with any provisions of these regulations would cause undue hardship, would be unreasonable, impractical or not feasible under the circumstances, the Commission may permit a variance from or consider a change in these regulations upon such conditions and with such time limitations as it may prescr for prevention, control or abatement of air pollution in ha mony with the intent of the Act. No variance may permit or authorize the maintenance of a nuisance or a danger to public health or safety.

19.6 Degradation of Existing Emission Quality Restricted. Emissions whose quality as of the effective date of these regulations is higher than the standards set forth in Table 3 shall be maintained at the higher quality unless it can be affirmatively demonstrated to the Department that a change in quality is justifiable and will not be contrary to the guidelines as set forth by these regulations.

19.7 Measurement of Concentrations.

19.7.1 The methods listed in Table 4 or such equivalent methods as may be approved by the Department shall be utilized to determine particulate concentrations in stack gases.

19.7.2 Measurement equipment shall be periodically calibrated to comply with minimal American Bureau of Standards Criteria.

19.8 More Stringent Requirements.

*19.8.1 The Department may prescribe air quality control requirements that are more restrictive and more extensive than provided for in Sections 19.4 and 19.5 if the particulate matter and/or suspended particulate matter emitted is toxic, or a deleterious substance which may affect human health or well-being or which would cause significant damage to animal or plant life.

*20.0 Refuse Incinerators.

*20.1 Purpose. The purpose of this section of these reg tions is to prevent the operation or construction o ref incinerators in such a manner as to cause air pollution.

*20.2 Scope. This section applies to all incinerators operated or constructed in the state for the purpose of reducing refuse.

*20.3 The burning capacity of a refuse incinerator shall be the manufacturer's or designer's guaranteed maximum rate or such other rate as may be determined by the Department in accordance with good engineering practices. In case of conflict, the determination made by the Department shall govern.

*20.4 All refuse incinerators must be approved by the Department prior to installation. Any person planning to install or operate a refuse incinerator must make suitable application to the Department. Forms are available from the Department.

*20.5 The amount of particulate matter emitted by a refuse incinerator shall be determined using methods listed in Table 4 or any other method approved by the Department.

20.6 Restrictions on Emissions.

*20.6.1 No person shall cause or permit the emissions of particulate matter from any refuse incinerator in excess of 0.2 grains of particulate matter per standard cubic foot of dry flue gas corrected to fifty percent excess air or twelve percent carbon dioxide.

*20.6.2 All refuse incinerators must be multichambered or of a design which the Department accepts as being equivalent. All multichambered incinerators must be equipped with secondary burners of such design as to assure a temperature in the secondary combustion chamber of at least 1500°F. for 0 seconds or greater.

*20.6.3 No person shall burn or cause or permit the burning of refuse in any installation which was designed for the sole purpose of burning fuel without the authorization of the Technical Secretary.

*20.7 Disposal of Particulate Matter and/or Suspended Particulate Matter. No person shall cause or permit the handling, use, transport, or storage of any material in a manner which allows or may allow controllable particulate matter and/or suspended particulate matter, fly ash, etc., to become airborne in such amounts as to cause a public nuisance or to cause ambient air quality standards to be exceeded.

**20.8 All equipment, accessories, appurtenances, (i.e. secondary burners, etc.) of a refuse incinerator installation shall be maintained in proper working condition and shall be operated at all times when the refuse incinerator is operated. (See also Sections 8.9 and 17.8)

21.0 Emission of Particulate Matter from Fuel Burning Equipment.

21.1 Purpose. The purpose of this section shall be to limit the quantity of particulate matter emitted from fuel burning equipment.

21.2 Scope. This section applies to fuel burning installations utilized for the primary purpose of producing steam, hot water, hot air or other indirect heating of liquids, gases, or solids where the products of combustion do not have direct contact with process materials. Fuel includes coal, coke, lignite, coke breeze, fuel oil, wood, or other fuels. When any products or by-products of a manufacturing process are burned for the same purpose or in conjunction with any fuel, the same maximum emission limitations shall apply.

*21.3 Emission Limitations. No person shall cause, suffer, allow or permit the emission of particulate matter and/or suspended particulate matter to the atmosphere from any fuel burning equipment in excess of 0.6 pounds per 10^6 BTU of heat input.

*21.3.1 Variances. Where upon written application of the responsible person or persons the Technical Secretary finds that by reason of exceptional circumstances strict conformity with any provisions of these regulations would cause undue hardship, would be unreasonable, impractical, or not feasible under the circumstances, the Commission may permit a variance from or consider a change in these regulations upon such conditions and with such time limitations as it may prescribe for prevention, control, or abatement of air pollution in harmony with the intent of the Act.

No variance may permit or authorize the maintenance of a nuisance, or a danger to public health or safety.

21.4 Degradation of Existing Emission Quality Restricted. Emissions whose quality as of the effective date of these regulations is higher than the standards set forth in Section 21.3 shall be maintained at the higher quality unless it can be affirmatively demonstrated to the Department that a change in quality is justifiable and will not be contrary to the guidelines as set forth by these regulations.

21.5 Measurement of Concentrations.

21.5.1 The methods listed in Table 4 or such equivalent methods as may be approved by the Department shall be utilized to determine particulate concentrations in stack gases.

21.5.2 Measurement equipment shall be periodically calibrated to comply with minimal American Bureau of Standards Criteria.

21.6 More Stringent Requirements.

*21.6.1 The Department may prescribe air quality control requirements that are more restrictive and more extensive than provided for in Section 21.3 if the particulate matter and/or suspended particulate matter emitted is toxic, or a deleterious substance which may affect human health or well-being or which would cause significant damage to animal or plant life.

*22.0 Control of Emission of Organic Compounds from New Sources and Existing Sources.

22.1 Purpose. The purpose of this section shall be to limit the quantity of organic compounds emitted.

*22.2 Scope. This section is applicable to any source from which an organic compound is emitted (except methane).

*22.3 Storage of Volatile Organic Compounds (Large Tanks). No person shall place, store or hold in any new stationary tank, reservoir, or other container of more than 40,000 gallons (151,400 liters) capacity, 50,000 gallons (189,300 liters) for existing containers, any volatile organic compounds unless such tank, reservoir or other container is a pressure tank capable of maintaining working pressures sufficient at all times under normal operating conditions to prevent vapor or gas loss to the atmosphere or is designed and equipped with one of the following vapor loss control devices:

(a) A floating roof, consisting of a pontoon type, double deck type roof or internal floating cover, which will rest on the surface of the liquid contents and can be equipped with a closure seal or seals to close the space between the roof edge and tank wall. This control equipment shall not be permitted if the organic compounds have a vapor pressure of 11.0 pounds per square inch absolute or greater under actual storage conditions. All tank gauging and sampling devices shall be gas-tight except when gauging or sampling is taking place.

(b) A vapor recovery system, consisting of a vapor gathering system capable of collecting the organic compound vapors and gases and a vapor disposal system capable of processing such organic vapors and gases so as to prevent their emission to the atmosphere and with all tank gauging and sampling devices gas-tight except when gauging or sampling is taking place.

(c) Other equivalent equipment or means as may be approved by the Technical Secretary.

This section does not apply to existing storage tanks having a nominal storage capacity of 420,000 gallons (1,589,900 liters) or less of crude oil or condensate or to new crude or condensate storage tanks having a nominal storage capacity of 420,000 gallons (1,589,900 liters) or less unless such new tanks are subject to 40 CFR Part 60 Subpart K. Not withstanding any provision to the contrary contained in this regulation, the provisions of Regulations 22.3 and A 22.3 of the August 1, 1974 Regulations of the Louisiana Air Control Commission shall remain in effect until receipt of approval by the U. S. Environmental Protection Agency of Section 51.14 of the State Implementation Plan for the State of Louisiana adopted by the Louisiana Air Control Commission on November 30, 1977. At such time as State Implementation Plan approval is received, this regulation (22.3) shall then become effective.

*22.4 Storage of Volatile Organic Compounds (Small Tanks). No person shall place, store or hold in any stationary tank, reservoir, or other container of more than 250 gallons (950 liters) capacity any volatile organic compounds unless the container is equipped with a submerged fill pipe, a vapor recovery system or other equivalent equipment or means as may be approved by the Technical Secretary. This section does not apply to storage of crude or condensate.

*22.5 Volatile Organic Compounds (Loading Facilities). Any loading facility for volatile organic compounds servicing tanks, trucks or trailers having a capacity in excess of 200 gallons (760 liters) and having 20,000 gallons (75,700 liters) or more throughput per day, 40,000 gallons (151,400 liters) or more for existing facilities, averaged over any thirty-day period, must be equipped with a vapor collection and disposal system or equivalent means thereof, properly installed, in good working order; or in operation a loading system which will result in a ninety-five percent submerged fill either with a submerged fill pipe, or by loading from the bottom. Provisions must be made to prevent spills during the attachment and disconnection of filling lines or arms. This section does not apply to crude or condensate loading facilities.

*22.6 Volatile Organic Compounds Water Separation. Single or multiple compartment volatile organic compound water separators which receive effluent water containing 200 gallons (760 liters) a day or more of any volatile organic compound from any equipment processing, refining, treating, storing, or handling volatile organic compounds shall be equipped with one of the following vapor loss control devices properly installed in good working order and in operation:

(a) A container having all openings sealed and totally enclosing the liquid contents. All gauging and sampling devices will be gas-tight except when gauging or sampling is taking place.

(b) A container equipped with a floating roof, consisting of a pontoon type, double deck type roof, or internal floating cover which rests on the surface of the contents and be equipped with a closure seal or seals to close the space between the roof edge and container wall. All gauging and sampling devices will be gas-tight except when gauging or sampling is taking place.

(c) A container equipped with a vapor disposal system capable of processing such organic vapors and gases so as to prevent their emission to the atmosphere and with all container gauging and sampling devices gas-tight except when gauging or sampling is taking place.

(d) Other equivalent equipment or means as may be approved by the Technical Secretary.

This subsection does not apply to oil field separators.

*22.7 Pumps, Compressors, Valves, etc. All pumps and compressors handling volatile organic compounds shall be equipped with mechanical seals or other equivalent equipment or means as may be approved by the Technical Secretary.

*22.7.1 Housekeeping. Best practical housekeeping and maintenance practices must be maintained at the highest possible standards to reduce the quantity of organic compound emissions. Emission of organic compounds must be reduced wherever feasible.

*22.8 Waste Gas Disposal. Any waste gas disposal stream containing organic compounds from any emission source including those emissions from process unit upsets, start-ups and shutdowns shall be controlled by one of the following methods:

(a) Nonhalogenated hydrocarbons shall be burned at 1300°F (704°C) for 0.3 second or greater in a direct-flame afterburner or an equally effective device.

(b) Halogenated hydrocarbons shall be burned and the products of combustion subsequently controlled. The hydrocarbons shall be totally combusted and the halogenated products of combustion shall be reduced to a concentration which will not exceed undesirable levels (Section 4.74) at or beyond the property line.

(c) Other methods of control (such as, but not limited to, carbon adsorption, refrigeration, catalytic and/or thermal reaction, secondary steam stripping, recycling or vapor recovery system) may be substituted for burning provided it is acceptable to the Technical Secretary.

Where it can be demonstrated to the Department that the waste gas stream:

1. is not significant,
2. will not support combustion without auxiliary fuel, or
3. disposal cannot be practically or safely accomplished by other means without causing economic hardship, the Technical Secretary may waive this requirement.

This section does not apply to safety relief and vapor blowdown systems where control cannot be accomplished because of safety or economic considerations. However, the emissions from these sytems shall be reported to the Department as required under Section 17.13. Emergency occurrences shall be reported under Section 17.11.

*22.9 Organic Solvents. Any emission source using organic solvents having an emission of organic solvents of more than 3 pounds (1.3 kilograms) per hour or 15 pounds (6.8 kilograms) per day shall reduce the emission where feasible, by incorporating one or more of the following control methods:

(a) Incineration, provided ninety percent of the carbon in the organic compounds being incinerated is oxidized to carbon dioxide.

(b) Carbon absorption of the organic compounds.

(c) Any other equivalent means as may be approved by the Technical Secretary.

**22.9.1 Soldering Operations, Paint and Coating Operations, Dry Cleaning Operations Using Organic Solvents. Soldering operations, paint and coating operations or dry cleaning operations using organic solvents which are not considered photochemically reactive shall be considered for exemption from the requirements of Section 22.9 of the Air Control Commission regulations.

For the purposes of the statement, a photochemically reactive solvent is any solvent with an aggregate of more than twenty percent of its total volume composed of the chemical compounds classified below or which exceeds any of the following individual percentage composition limitations, referred to the total volume of solvent:

1. A combination of hydrocarbons, alcohols, aldehydes, esters, ethers, or ketones having an olefinic or cycloolefinic type of unsaturation: five percent.
2. A combination of aromatic compounds with eight or more carbon atoms to the molecule except ethylbenzene: eight percent.
3. A combination of ethylbenzene, ketones having branched hydrocarbon structures, trichloroethylene or toluene: twenty percent.

Whenever any organic solvent or any constituent of an organic solvent may be classified from its chemical structure into more than one of the above groups of organic compounds, it shall be considered as a member of the most reactive chemical group, that is, that group having the least allowable percent of the total volume of solvents.

*22.10 Exemptions. Sources emitting volatile organic compounds which do not react to form photochemical oxidants may be considered for exemption by the Technical Secretary if their control causes economic hardship. Notwithstanding any provision to the contrary contained in this regulation, the provisions of Regulations 22.10 and A 22.10 of the August 1, 1974, Regulations of the Louisiana Air Control Commission

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shall remain in effect until receipt of approval by the U. S. Environmental Protection Agency of Section 51.14 of the State Implementation Plan for the State of Louisiana adopted by the Louisiana Air Control Commission on November 30, 1977. At such time as State Implementation Plan approval is received, this regulation (22.10) shall then become effective.

*22.11 Variances. Where upon written application of the responsible person or persons the Technical Secretary finds that by reason of exceptional circumstances strict conformity with any provisions of these regulations would cause undue hardship, would be unreasonable, impractical or not feasible under the circumstances, the Commission may permit a variance from or consider a change in these regulations upon such conditions and with such time limitations as it may prescribe for prevention, control, or abatement of air pollution in harmony with the intent of the Act.

No variance may permit or authorize the maintenance of a nuisance, or a danger to public health or safety.

*23.0 Control of Emissions from the Chemical Woodpulping Industry.

*23.1 Purpose. The purpose of this section shall be to limit the quantity of emissions from pulp manufacturing plants.

23.2 Scope. This section aplies to manufacturing facilities for the pulping of wood and the preparation and recovery of associated chemicals by the kraft process, including combined recovery systems serving other processes such as neutral sulfite pulping.

*23.3 General. The pulp production rates referred to in this section shall be equivalent tons of unbleached air-dry kraft pulp. The equivalent production rate shall be calculated as actual tons of kraft pulp or on the basis that 3,000 pounds dry solids in spent liquor represents one ton equivalent kraft pulp, (1,500 kilograms equals 1 metric ton). Lime kiln load shall be rated on the basis of actual kraft pulp tons or on the basis that 550 pounds of reburned lime represents one ton equivalent kraft pulp, (275 kilograms equals 1 metric ton).

23.4 Emission Limitations. No person shall cause, suffer, allow or permit emissions to the atmosphere in excess of the limitations stated in this section. Notwithstanding the specific limits set forth in this section, in order to maintain the lowest possible emission of air contaminants, the highest and best practicable treatment and control currently available shall be provided in every case of new construction and/or modernization.

*23.4.1 Particulate Emissions. Emission of particulate matter shall not exceed the following limits.

(1) For recovery furnaces, not more than 4.0 pounds per equivalent pulp ton, (2.0 kilograms per equivalent pulp metric ton).

(2) For smelt dissolver vents, not more than 0.5 pounds per equivalent pulp ton, (0.25 kilograms per equivalent pulp metric ton).

(3) For lime kilns, not more than 1.0 pounds per equivalent pulp ton, (0.5 kilograms per equivalent pulp metric ton).

(4) For boilers fueled by bark, alone or in combination with other fuels, the provisions of Section 21 shall apply.

23.4.2 Sulfur Oxides. Emission of sulfur oxides shall not exceed the limits set forth in Section 24.7.4 of these regulations.

24.0 Emission Standards for Sulfur Oxides.

24.1 Purpose. The purpose of this section shall be to limit the quantity of sulfur oxides emitted.

24.2 Scope. This section applies to any operation, process or activity from which sulfur oxides are emitted.

24.3 Responsible Person to Have Tests Made. The Department may require any person responsible for emission of air contaminants to make or have made tests to determine the emission of air contaminants from any source, whenever the Department has reason to believe that an emission in excess of that allowed by these regulations is occurring. The Department may specify testing methods to be used in accordance with good professional practice. The Department may observe the testing. All tests shall be conducted by reputable, qualified personnel. The Department shall be given a copy of the test results in writing and signed by the person responsible for the tests.

24.4 The Department May Make Tests. The Department may conduct tests of emissions of air contaminants from any source. Upon request of the Department the person responsible for the source to be tested shall provide necessary sampling ports in stacks or ducts and such other safe and proper sampling and testing facilities, exclusive of instruments and sensing devices, as may be necessary for proper determination of the emission of air contaminants.

24.5 Degradation of Existing Emission Quality Restricted. Emissions whose quality as of the effective date of these regulations is higher than the standards set forth herein shall be maintained at the higher quality unless it can be affirmatively demonstrated to the Department that a change in quality is justifiable and will not be contrary to the purpose of these regulations.

24.6 Measurement of Concentrations.

24.6.1 The methods listed in Table 4 or such equivalent method as may be approved by the Department shall be utilized to determine sulfur dioxide concentrations in stack gases.

24.6.2 Measurement equipment shall be periodically calibrated to comply with minimal American Bureau of Standards Criteria.

*24.7 Emissions. Sections 24.7.1 and 24.7.3 apply to new sources; Section 24.7.4 applies to existing and new sources not covered in Sections 24.7.2 or 24.7.3.

*24.7.1 All refinery process gas streams or any other process gas stream that contains sulfur compounds measured as hydrogen sulfide shall be controlled by flaring or combustion. Small units may be exempted from this section by the Technical Secretary.

**24.7.2 The emissions of sulfur dioxide and acid mist from new sulfuric acid production units shall be limited to that specified in 40 CFR Part 60, Subpart H, i.e. 4.0 pounds/ton of 100 percent H_2SO_4 (2 kilograms/metric ton) and 0.15 pounds/ton of 100 percent H_2SO_4, (.075 kilograms/metric ton) respectively. Emissions from existing units shall be limited as follows: SO_2—not more than 2000 ppm by volume (3 hour average); acid mist—not more than 0.5 pounds/ton of 100 percent H_2SO_4.

24.7.3 The emission of sulfur oxides calculated as sulfur dioxide from a sulfur recovery plant shall be limited to 0.01 pound (kilogram) per pound (kilogram) of sulfur processed. This emission limitation corresponds to a sulfur dioxide concentration of approximately 1,300 ppm by volume.

*24.7.4 No person shall cause or permit the emission of sulfur dioxide, sulfur trioxide, and sulfuric acid mist, from any source, in such manner and amounts that the concentrations attributable to such emissions at any point beyond the premises on which the source is located exceeds those values set forth in Table 1. Nor shall any person discharge gases which contain concentrations of SO_2 which exceeds 2000 ppm by volume at standard conditions. Small units emitting sulfur compounds measured as sulfur dioxide may be exempted from the 2000 ppm (v) limitation by the Technical Secretary.

*24.8 Variances. Where upon written application of the responsible person or persons the Technical Secretary finds that by reason of exceptional circumstances strict conformity with any provisions of these regulations would cause undue hardship, would be unreasonable, impractical or not feasible under the circumstances, the Commission may permit a variance from or consider a change in these regulations upon such conditions and with such time limitations as it may prescribe for prevention, control or abatement of air pollution in harmony with the intent of the Act. No variance may permit or authorize the maintenance of a nuisance, or a danger to public health or safety.

**24.9 Exceptions.

**24.9.1 Start-up Provisions. A four-hour start-up exemption from the emission limitations of Section 24.7.2 may be authorized by the Technical Secretary for plants not subject to 40 CFR Part 60 Subpart H which have been shut down.

**24.9.2 On-line Operating Adjustments. A four-hour exemption from emission limitations of Section 24.7.2 may be extended by the Technical Secretary to plants not subject to 40 CFR Part 60 Subpart H where upsets have caused excessive emissions and on-line operating changes will eliminate a temporary condition. A complete report, in writing, explaining the conditions and duration of the upset, shall be submitted to the Technical Secretary within seven calendar days of the occurrence. This provision is applicable to infrequent upsets only and ambient air quality shall not be significantly affected by such upsets. The Department reserves the right to review excessive use of this provision on an individual basis.

25.0 Control of Carbon Monoxide Emissions (New Sources).

25.1 Purpose. The purpose of this section shall be to limit the quantity of carbon monoxide emitted.

25.2 Scope. This section applies to any operation, process or activity from which carbon monoxide is emitted.

25.3 Responsible Persons to Have Tests Made. The Department may require any person responsible for emission of air contaminants to make or have made tests to determine the emission of air contaminants from any source, whenever the Department has reason to believe that an emission in excess of that allowed by these regulations is occurring. The Department may specify testing methods to be used in accordance with good professional practice. The Department may observe the testing. All tests shall be conducted by reputable, qualified personnel. The Department shall be given a copy of the test results in writing and signed by the person responsible for the tests.

25.4 The Department May Make Tests. The Department may conduct tests of emissions of air contaminants from any source. Upon request of the Department the person responsible for the source to be tested shall provide necessary sampling ports in stacks or ducts and such other safe and proper sampling and testing facilities, exclusive of instruments and sensing devices, as may be necessary for proper determination of the emission of air contaminants.

25.5 Degradation of Existing Emission Quality Restricted. Emissions whose quality as of the effective date of these regulations is higher than the standards set forth herein shall be maintained at the higher quality unless it can be affirmatively demonstrated to the Department that a change in quality is justifiable and will not be contrary to the purpose of these regulations.

25.6 Emissions.

*25.6.1 Ferrous Metal Emissions. No person shall emit the carbon monoxide gases generated during the operation of a gray iron cupola, blast furnace, or basic oxygen steel furnace unless they are burned in a direct-flame afterburner or are controlled by other means as may be approved by the Technical Secretary.

*25.6.2 Petroleum Industry Emissions. No person shall emit the carbon monoxide waste gas stream from any catalyst regeneration of a petroleum cracking system, petroleum fluid coker, or other petroleum process into the atmosphere unless the waste gas stream is burned in a direct-flame afterburner or boiler or is controlled by other means as may be approved by the Technical Secretary.

26.0 Emission Standards for the Nitric Acid Industry.

26.1 Purpose. The purpose of this section shall be to limit the quantity of atmospheric emissions from nitric acid plants.

26.2 Scope. This section is applicable to all nitric acid production units in the State of Louisiana.

26.3 Exceptions.

26.3.1 Start-up Provisions. A four-hour start-up exemption from emission regulations may be authorized by the Technical Secretary for plants not subject to 40 CFR Part 60 Subpart G which have been shut down. It is recognized that existing nitrogen oxide abatement equipment is effective only at normal operating temperatures. This provision allows the necessary time to bring up a facility from a cold start to near steady state condition.

*26.3.2 On-line Operating Adjustments. A four-hour exemption from emission regulations may be extended by the Technical Secretary to plants not subject to 40 CFR Part 60 Subpart G where upsets have caused excessive emissions and on-line operating changes will eliminate a temporary condition. A complete report, in writing, explaining the conditions and duration of the upset shall be submitted to the Technical Secretary within seven calendar days of the occurrence. This provision is applicable to infrequent upsets only and ambient air quality shall not be significantly affected by such upsets.

The Department reserves the right to review excessive use of this provision on an individual basis.

26.4 Emissions. The emission of nitrogen oxides, calculated as nitrogen dioxide, from nitric acid production units shall be limited to 6.5 pounds per ton (3.3 kilogram/metric ton) of 100 percent acid produced. This emission limitation is equivalent to a nitrogen dioxide concentration of approximately 500 ppm by volume.

26.5 Responsible Persons to Have Tests Made. The Department may require any person responsible for emission of air contaminants to make or have made tests to determine the emission of air contaminants from any source, whenever the Department has reason to believe that an emission in excess of that allowed by these regulations is occurring. The Department may specify testing methods to be used in accordance with good professional practice. The Department may observe the testing. All tests shall be conducted by reputable, qualified personnel. The Department shall be given a copy of the test results in writing and signed by the person responsible for the tests.

26.6 The Department May Make Tests. The Department may conduct tests of emissions of air contaminants from any source. Upon request of the Department the person responsible for the source to be tested shall provide necessary sampling ports in stacks or ducts and such other safe and proper sampling and testing facilities, exclusive of instruments and sensing devices, as may be necessary for proper determination of the emission of air contaminants.

26.7 Degradation of Existing Emission Quality Restricted. Emissions whose quality as of the effective date of these regulations is higher than the standards set forth herein shall be maintained at the higher quality unless it can be affirmatively demonstrated to the Department that a change in quality is justifiable and will not be contrary to the purpose of these regulations.

26.8 Measurement of Concentrations.

26.8.1 The methods listed in Table 4 or such equivalent method as may be approved by the Department shall be utilized to determine oxide of nitrogen concentrations in stack gases.

26.8.2 Measurement equipment shall be periodically calibrated to comply with minimal American Bureau of Standards Criteria.

*27.0 Prevention of Air Pollution Emergency Episodes.

27.1 Purpose. This regulation is designed to prevent the buildup of excess concentrations of air contaminants, during periods of high air pollution potential.

27.2 Scope. The Air Pollution Emergency Episode Plan described herein shall apply to prevention of damage to the health of the people of the State of Louisiana by air pollution episodes.

27.3 Episode Criteria. The Technical Secretary shall have reason to declare an Air Pollution Alert, Air Pollution Warning, or Air Pollution Emergency, whenever he determines that air pollutant concentrations have reached a point in any place that is approaching or has reached a level that could, if substained long enough, cause a substantial threat to the health of persons. In making this determination, the Technical Secretary will be guided by the following criteria.

27.3.1 "Air Pollution Forecast." The first stage is the Air Pollution Forecast, which is actuated by an Atmospheric Stagnation Advisory by the National Weather Service. The Air Pollution Forecast advises Air Control personnel that atmospheric conditions capable of causing an Air Pollution Emergency Episode exist in the area for which the advisory was issued.

*27.3.2 "Alert." The alert level is the concentration of pollutant at which the first stage of control action is taken. An alert will be declared when any one of the following levels is reached at any monitoring site:

SO_2—800 ug/m^3 (0.3 ppm), 24-hr. average

Particulate—3.0 COH or 375 ug/m^3, 24-hr. average

SO_2 and Particulate Combined—product of SO_2 ppm, 24-hr. average, and COHs equal to 0.2 or product of SO_2—ug/m^3, 24-hr. average, and particulate-ug/m^3 24-hr. average equal to 65 x 10^3

CO—17mg/m^3 (15 ppm), 8-hr. average

Oxidant (O_3—400 ug/m^3 (0.2 ppm), 1-hr. average

NO_2—1130 ug/m^3 (0.6 ppm), 1-hr. average 282 ug/m^3 (0.15 ppm), 24-hr. average

and meteorological conditions indicate that the pollutant concentrations will remain at the above levels twelve hours or more or increase unless control actions are taken.

27.3.3 "Warning." The warning level indicates that pollutant concentration levels are continuing to rise and further control measures are needed. A warning will be declared when any one of the following levels is reached at any monitoring site:

SO_2—1600 ug/m^3 (0.6 ppm), 24-hr. average

Particulate—5.0 COHs or 625 ug/m^3, 24-hr. average

SO_2 and Particulate Combined—product of SO_2 ppm, 24-hr. average, and COHs equal to 0.8 or product of SO_2—ug/m^3, 24-hr. average, and particulate-ug/m^3, 24-hr. average equal to 261 x 10^3

CO—34 mg/m^3 (30 ppm), 8-hr. average

Oxidant (O_3)—800 ug/m^3 (0.4 ppm), 1-hr. average

NO_2—2260 ug/m^3 (1.2 ppm), 1-hr. average 565 ug/m^3 (0.30 ppm), 24-hr. average

and meterological conditions indicate that the pollutant concentrations remain at the above levels twelve hours or more or increase unless control actions are taken.

*27.3.4 "Emergency." The emergency level indicates that pollutant concentrations are increasing to dangerous levels and that the most stringent control actions are necessary in order to assure a reduction in pollutant concentration levels. An emergency will be declared when any one of the following levels is reached at any monitoring site:

SO_2—2100 ug/m^3 (0.8 ppm), 24-hr. average

Particulate—7 COHs or 875 ug/m^3, 24-hr. average

SO_2 and Particulate Combined—product of SO_2 ppm, 24-hr. average, and COHs equal to 1.2 or product of SO_2—ug/m^3, 24-hr. average and particulate—ug/m^3, 24-hr. average equal to 393 x 10^3,

CO—46 mg/m^3 (40 ppm), 8-hr. average

Oxidants (O_3)—1000 ug/m^3 (0.5 ppm) 1-hr. average.

NO_2—3000 ug/m^3 (1.6 ppm), 1-hr. average 750 ug/m^3 (0.4 ppm), 24-hr. average

and meteorological conditions indicate that the pollutant concentrations will remain at the above levels twelve hours or more or increase unless control actions are taken.

*27.4 Emission Reduction Plans for Preventing Air Pollution Emergency Episodes.

27.4.1 When the Technical Secretary declares an Air Pollution Alert, any person responsible for the operation of sources of air pollution as listed in Table 5 shall take such action as prescribed by Table 5 and shall activate the preplanned abatement strategy listed in Section 27.5 for an Air Pollution Alert.

27.4.2 When the Technical Secretary declares an Air Pollution Warning, any person responsible for the operation of sources of air pollution as listed in Table 6 shall take such action as prescribed by Table 6 and shall activate the preplanned strategy listed in Section 27.5 for an Air Pollution Warning.

27.4.3 When the Technical Secretary declares an Air Pollution Emergency, any person responsible for the operation of sources of air pollution as listed in Table 7 shall take such action as prescribed by Table 7 and shall activate the preplanned abatement strategy for an Air Pollution Emergency.

27.4.4 When the Technical Secretary determines that the criteria level has been reached due to the emissions of a limited number of sources, he shall notify such sources that the preplanned strategy in Table 5, 6, or 7 or standby plan should be put into effect.

27.5 Preplanned Strategies.

27.5.1 Any person responsible for operation of a source as listed in Tables 5, 6, and 7 shall prepare standby plans for the reduction of emissions during periods of Air Pollution Alert, Air Pollution Warning and Air Pollution Emergency, standby plans shall be designed to reduce or eliminate emissions in accordance with the objectives as set forth in Tables 5, 6, and 7.

27.5.2 Any persons responsible for the operation of any source not listed in Tables 5, 6, and 7 shall, when requested by the Technical Secretary, submit a standby plan for the reduc-

*Table 4

Emissions—Methods of Contaminant Measurement

Emission	Analytical Method
Particulate	1) Title 40, Code of Federal Regulations, Part 60, Appendix A—Methods 1, 2, 3, 4, 5 or equivalent method, or Part 60.8(b).
Sulfur Oxides	1) Seidman, Analytical Chemistry Volume 30, page 1680 (1958) "Determination of Sulfur Oxides in Stack Gases."
	2) Shell Development Company Method for the Determination of Sulfur Dioxide and Sulfur Trioxide PHS 999 AP-13 Appendix B, pages 85-87 "Atmospheric Emissions Sulfuric Acid Manufacturing Processes".
	3) Reich Test for Sulfur Dioxide, "Atmospheric Emissions from Sulfuric Acid Manufacturing Processes" PHS 999 AP-13 Appendix B, pages 76-80.
	4) The Modified Monsanto Company Method, "Atmospheric Emissions from Sulfuric Acid Manufacturing Processes" PHS 999 AP-13, Appendix B, pages 61-67.
	5) Title 40, Code of Federal Regulations Part 60, Appendix A, Test Methods 1, 2, 3, 4, 6 and 8, or Part 60.8(b).
Oxides of Nitrogen	1) Title 40, Code of Federal Regulations, Part 60 Appendix A, Test Methods 1, 2, 3, 4 and 7, or Part 60.8(b).
*Visible Emissions	1) Ringelmann Chart published and described in the "U.S. Bureau of Mines Information Circular 8333" or U.S. Public Health Service Smoke Inspection Guide as described in the Federal Register, Title 42, Chapter 1, Sub-Chapter F, Part 75.
	**2) Title 40, Code of Federal Regulations Part 60, Appendix A-Method 9.
**Total Fluoride	1) Title 40, Code of Federal Regulations, Part 60, Appendix A-Methods 1, 2, 3, 13A and 13B.

Table 5

Emission Reduction Plans—Alert Level

Part A. General

1. There shall be no open burning by any persons of tree waste, vegetation, refuse, or debris in any form.
2. The use of incinerators for the disposal of any form of solid waste shall be limited to the hours between 12:00 noon and 4:00 p.m.
3. Persons operating fuel-burning equipment which requires boiler lancing or soot blowing shall perform such operations only between the hours of 12:00 noon and 4:00 p.m.
4. Persons operating motor vehicles should eliminate all unnecessary operations.

Part B. Source Curtailment

Any person responsible for the operation of a source of air pollutants listed below shall take all required control actions for this alert level.

Source of Air Pollution	Control Action
1. Electric power generating facilities.	a. Substantial reduction by utilization of fuels having low ash and sulfur content.
	b. Maximum utilization of midday (12:00 noon to 4:00 p.m.) atmospheric turbulence for boiler lancing and soot blowing.
	c. Substantial reduction by diverting electric power generation to facilities outside of Alert Area.

MAINE

601. Incinerator particulate emission standard

1. Scope. This section shall be applicable to all incinerators and shall be effective in all regions in the State of Maine as follows:

A. Immediately for all incinerators, the construction or operation of which begins after January 31, 1972;

1973, c. 438, § 8.

B. June 1, 1975 for all existing incinerators, except existing wood waste teepee incinerators; and

1973, c. 438, § 8; 1976, c. 669, § 2.

C. June 1, 1980 for all existing wood waste teepee incinerators.

1976, c. 669, § 3.

2. Emission standard. No person shall emit or cause to be emitted any particulate air contaminants from:

A. Any incinerator, darker than a number 1 on the Ringelmann Chart, excluding the emission of water vapor;

B. Any class III, IV, V, VI and VII incinerator having a designed charging rate of 50 tons per day or less, that exceed 0.2 grain per standard cubic foot of dry flue gas during any continuous 2-hour period, corrected to 12% carbon dioxide without the contribution of carbon dioxide from the auxiliary fuel.

C. Any class incinerator having a designed charging rate greater than 50 tons per day, that exceed 0.08 grain per standard cubic foot of dry flue gas during any continuous 2-hour period, corrected to 12% carbon dioxide without the contribution of carbon dioxide from the auxiliary fuel.

3. Test methods and procedures. Test methods 1, 3 and 5 as promulgated by the Administrator of the United States Environmental Protection Agency in Regulation 60.85 published in the Federal Register, volume 36, number 247, December 23, 1971 or such other methods as are deemed equivalent by the Board shall be those used to determine compliance with this section.

1973, c. 438, § 8.

§ 604. Sulfur dioxide emission standard for sulfite pulping processes

1. Scope. The emission standard shall apply to all emissions of sulfur dioxide from sulfite pulping processes except sulphur dioxide produced from the burning of coal or petroleum fuels. This emission standard shall become effective in all regions as follows:

A. Immediately for any sulfite pulping process, the construction or operation of which begins after January 31, 1972;

B. June 1, 1975 for all existing sources.

2. Emission standard. No person shall emit or cause to be emitted any sulfur dioxide emissions from any emission source within the scope of this emission standard in excess of 40 pounds per air dried ton of sulphite pulp produced.

3. Test methods and procedures. Test methods 1 and 6 as promulgated by the Administrator of the United States Environmental Protection Agency in Regulations 60.85 as published in the Federal Register, volume 36, number 247, December 23, 1971, or such other methods as are deemed equivalent by the Board shall be used to determine compliance with this regulation.

1973, c. 438, § 8.

MAINE

§ 594. Repealed.

1969, c. 474; 1972, c. 618; 1977, c. 300, § 47.

§ 595. Repealed

1969, c. 474; 197[illegible]

§ 596. Repealed

1969, c. 474; 1971, c. [illegible]

~~§ 597. Municipal air pollution control~~

~~Nothing in this chapter shall be construed as a preemption of the field of air pollution study and control on the part of the State. Municipalities may study air pollution and adopt and enforce air pollution control and abatement ordinances to the extent that these ordinances are not less stringent than this chapter or than any standard, order or other action promulgated pursuant to this chapter. Local ordinance provisions which touch on matters not dealth with by this chapter or which are more stringent than this chapter shall bind persons residing in the municipality.~~

§ 598. Visible emissions

1. Scope. This section shall be effective in all ambient air quality regions in the State of Maine as follows:

A. Immediately for all emission sources, the construction or operation of which begins after January 31, 1972;

B. October 1, 1973 for all existing sources.

2. Prohibition. No person shall emit or cause to be emitted any visible air contaminants from any emission source that exceeds a number 2 on the Ringelmann Chart or an opacity of 40% except for periods of not exceeding 5 minutes in any one hour or 15 minutes in any continuous 3-hour period.

3. Exemptions. This section shall not apply to emissions of water vapor, incinerators, air contaminants emitted for the purpose of research training or recreation and so certified by the board and permitted open burning. Existing general process sources which are otherwise granted a longer period of time to comply with section 602 shall be exempt from this section until such time as such standard becomes applicable.

1973, c. 438, § 8.

§ 599. Open burning

1. Prohibitions.

A. Open burning of tires or rubber products or by-products is prohibited after July 1, 1972;

B. Except as provided in subsection 2, open burning of waste of any kind at sites other than a municipal solid waste disposal site is prohibited after July 1, 1975.

C. Open burning of solid waste material at a municipal solid waste disposal site serving less than 1,000 persons shall only be prohibited where the Board of Environmental Protection, after investigation and hearing, shows that the continuance of open burning at a specific municipal site is in violation of air quality standards.

D. Open burning of solid waste materials at a municipal solid waste disposal site serving 1,000 or more persons is prohibited after September 1, 1975 unless the owner or lessee of the municipal solid waste disposal site apply for a variance under this section from the Board of Environmental Protection.

While an application for a variance is being processed by the Department of Environmental Protection, open burning at the municipal [illegible] in question may continue until the board makes its final decision on the application.

10.03.38.02

.02 CONTROL AND PROHIBITION OF VISIBLE EMISSIONS

A. Visible Emissions. A person shall not cause or permit the discharge of emissions from any installation or building other than water in an uncombined form, which are visible to human observers.

E. Visible Emissions from Metallurgical, Slot-Type, By-Product Coke Ovens.
(1) A person may not cause or permit emissions in any consecutive 60-minute period which are visible to human observers, other than water vapor in the uncombined form, to be discharged from a coke-oven operating unit for more than 25 seconds per charge except that one oven shall be allowed to discharge visible emissions for a maximum of 60 seconds. A charge is defined as commencing with the initial movement of coal from any of the larry car coal hoppers and terminating when the last lid is replaced and completely seated on the oven. In any installation where these emissions are controlled using an "Annulus Type" jumper pipe, one end oven per battery is excluded from this provision.

10.03.38.04

B. Sulfur Content Limitations for Fuel. A person may not burn, sell, or make available for sale any fuel with a sulfur content by weight in excess of the following limitations.
(1) All solid fuels, 1.0 percent.
(2) Distillate fuel oils, 0.3 percent.
(3) Residual fuel oils, 1.0 percent.
(4) On and after July 1, 1980: Residual fuel oil, 0.5 percent.
(5) Sulfur Content Limitations for Coke Ovens
(a) Coke oven process gases used as fuel from coke ovens constructed before the effective date of this regulation may not contain a plant-wide average of greater than 1.0% sulfur by weight in any two-hour period.

(b) Coke oven process gases used as fuel from coke ovens constructed or modified after the effective date of this regulation, when the construction or modification does not result in an increase in the plant's coke making capacity, may not contain a plant-wide average of greater than 1.0% sulfur by weight in any two-hour period.

(c) Where coke ovens are constructed or modified after the effective date of this regulation, and the construction or modification results in an increase in the plant's coke making capacity, the coke oven process gases used as fuel in the plant shall be desulfurized so that the plant-wide average sulfur content of the gases in any two-hour period is no greater than would exist if the gases produced by the increased capacity and the pre-existing coke making capacity, had been desulfurized to levels of 0.3 percent and 1.0 percent sulfur by weight, respectively.

10.03.38.04

(d) After June 30, 1983, the plant-wide average in any two-hour period of the sulfur content by weight of coke oven gas used as fuel from coke ovens constructed before the effective date of this regulation may not exceed that permitted in residual fuel oils.

C. Sulfur Compounds from Other Than Fuel Burning Equipment.

(1) A person shall not cause or permit the discharge into the atmosphere from installations other than fuel burning installations of gases containing more than 500 ppm of sulfur dioxide. Installations constructed before February 21, 1971 are limited to not more than 2000 ppm sulfur dioxide.

G. Nitrogen Oxides from Fuel Burning Equipment.

(1) New Fuel Burning Equipment Erected on or After May 12, 1972.
A person shall not cause or permit the discharge of nitrogen oxides into the atmosphere, from any new fuel burning equipment having a heat input rating of 250 million British Thermal Units (BTU) (264 gigajoules) per hour or more, in excess of the following rates:

a. 0.20 pounds (86 gm) per million BTU (gigajoules) heat input, maximum two hour average, expressed as NO_2 when gaseous fuel is burned.

b. 0.30 pounds (129 gm) per million BTU (gigajoules) heat input, maximum two hour average, expressed as NO_2 when liquid fuel is burned.

c. 0.50 pounds (215 gm) per million BTU (gigajoules) heat input, maximum two hour average, expressed as NO_2 when solid fuel is burned.

(2) Existing Fuel Burning Equipment Erected Before May 12, 1972.
A person shall not cause or permit the discharge of nitrogen oxides into the atmosphere, from any fuel burning equipment having a heat input rating of 250 million British Thermal Units (BTU)(9264 gigajoules) per hour or more, in excess of the rates attainable by the use of reasonably applicable control technology. Such control technology shall include, when appropriate as determined by the Department but not be limited to:

a. Low excess air firing,
b. Off-stoichiometric combustion,
  (1) Staged combustion
  (2) Selective burner service
c. Flue gas recirculation into the primary combustion zone
d. Burner Tilt (Corner-fired furnaces)

(3) Fuel burning installation on ships are exempt from provision of this section.

H. Nitrogen Oxides from Nitric Acid Plants. A person shall not cause or permit the discharge into the atmosphere from any nitric acid plant, nitrogen oxides in excess of 3.0 pounds per ton (1.50 kilograms per 1000 kilograms) of acid (100 percent basis) produced.

MASSACHUSETTS

REGULATION 2.5.1

2.5.1 U No person owning, leasing, or controlling the operation of any fossil fuel utilization facility shall cause, suffer, allow, or permit emissions therefrom in excess of those emission limitations set forth in the following tables and within the time schedule specified in Regulation 2.5.

EMISSIONS LIMITATIONS

Fossil Fuel Utilization Facilities

Particulates

Facility Size Million Btu/hr. Input	Emission Limitation lbs.(particulate)/million Btu		
	new	existing	existing (critical area of concern)
3 - 250	0.10	0.15	0.12
greater than 250	0.05*	0.15	0.12

Any emission testing to be compared to these limitations must be conducted under isokinetic sampling conditions and in accordance with method 5, as specified in the Federal Register, Volume 36, No. 247, December 23, 1971, or by another method correlated to the above method to the satisfaction of the Department.

* An emission rate of 0.10 lbs. (particulate) per million Btu will be allowed if a person is using equipment designed to control or reduce sulfur dioxide at the same time or in the same process so that the provisions of Regulation No. 5 are satisfied.

Oxides of Nitrogen

Facility Size Million Btu/hr. Input	Emission Limitation Pounds/million Btu
	new
greater than 250	0.3

Any emissions testing to be compared to this limitation must be conducted in accordance with method 7, as specified in the Federal Register, Volume 36, No. 247, December 23, 1971, or by another method which has been correlated to the above method to the satisfaction of the Department. This emission limitation shall not apply to gas turbine or diesel engines.

REGULATION 2.5.2

EMISSION LIMITATIONS
INDUSTRIAL FACILITIES

Gases

SULFUR DIOXIDE Contact Sulfuric Acid Plants	EMISSION LIMITATION
New	4 lbs/ton acid produced
Existing	27 lbs/ton acid produced
Existing (Critical Area)	27 lbs/ton acid produced
Other Sources	500 ppm and application of best control technology available in the opinion of the Department.
NITROGEN DIOXIDE	
All Sources	250 ppm and application of best control technology available.

MASSACHUSETTS

REGULATION 2.5.3

Regulation 2.5.3 No person owning, leasing, or controlling the operation of incinerator facilities shall cause, suffer, allow, or permit emissions therefrom in excess of those emission limitations set forth in the following tables and within the time schedules specified in Regulation 2.5.

EMISSION LIMITATIONS

Incinerators

Particulates

Incinerator Type	Emission Limitation (grains/scf @ 12% CO_2)	
	new	existing
municipal	.05	.10
commercial, industrial residential	.10	.10

Any emission testing to be compared to these limitations must be conducted under isokinetic sampling conditions and in accordance with the method described by Subpart E - "Standards of Performance for Incinerators" as specified in the Federal Register, Volume 36, No. 247, December 23, 1971, or by another method which has been correlated to the above method to the satisfaction of the Department.

REGULATION 4

4.1 U No person shall construct, substantially reconstruct, or alter or thereafter operate a fossil fuel utilization facility which has or will have an energy input capacity, rated by the Department, greater than three million (3,000,000) B.t.u. per hour unless the plans, specifications, Standard Operating Procedure, and maintenance procedure for said facility have been submitted to the Department for approval and approval in writing has been granted.

4.2 U Smoke Density Indicator (Amended September 1, 1972)

4.2.1 On or after April 1, 1973, no person shall cause, suffer, allow, or permit the burning of any grade oil or solid fuel in any fossil fuel utilization facility having an energy input capacity rated by the Department equal to or greater than ten million (10,000,000) B.t.u. per hour, that is not equipped with a smoke density sensing instrument and recorder which is properly maintained in an accurate operating condition, operates continuously and is equipped with an audible alarm to signal the need for combustion equipment adjustment or repair when the smoke density is equal to or greater than No. 1 of the Chart, and is available for inspection at reasonable times by a representative of the Department. Such inspection may include the review of recording charts which must be retained and made available for a period of one year from the date of use.

4.2.2 The Department may require fossil fuel utilization facilities, other than those specified under the provisions of Regulation 4.2.1 to be equipped with smoke density sensing devices and appurtenances if, in the opinion of the Department, such are deemed necessary.

4.2.3 No person shall sell, distribute for sale, and/or install a smoke density sensing device to be installed under the provisions of Regulation 4.2.1 or Regulation 4.2.2 that is of a design and Standard Operating Procedure that has not been approved by the Department.

4.3 U Amended to Regulation 4.3.1 as follows:
(Amended June 23, 1975)

MASSACHUSETTS

REGULATION 5.1

Regulation 5.1.1 (a) MB

No person owning, leasing, or controlling the operation of a fossil fuel utilization facility located in the Cities and Towns of Arlington, Belmont, Boston, Brookline, Cambridge, Chelsea, Everett, Malden, Medford, Newton, Somerville, Waltham, and Watertown shall cause, suffer, allow, or permit the burning therein of any fossil fuel having a sulfur content in excess of 0.28 pounds per million B.t.u. heat release potential (approximately equivalent to 0.5% sulfur content fuel oil), except as provided in Regulations 5.1.1 (b), 5.1.3, 5.1.4, and 5.2.1

Regulation 5.1.1 (b) MB

Between July 1, 1975 and July 1, 1977, any person owning, leasing, or controlling the operation of an electric facility having an energy input capacity rated by the Department of two and one half billion (2.5 billion) or greater B.t.u./hour located in the Cities and Towns of Arlington, Belmont, Boston, Brookline, Cambridge, Chelsea, Everett, Malden, Medford, Newton, Somerville, Waltham, and Watertown, may cause, suffer, allow, or permit the burning therein of any fossil fuel with a sulfur content not to exceed 0.55 pounds per million B.t.u. heat release potential (approximately equivalent to 1% sulfur content fuel oil) provided

(1) he has applied to the Department in writing to use such fuel and submitted any information as the Department may require, and

(2) the Department determines that the use of such fuel would not cause other applicable air pollution control regulations or ambient air quality standards to be violated, and

(3) the facility has available for conversion within (3) three hours of any notice from the Department a three (3) day supply of fuel with a lower sulfur content as specified by the Department which shall be utilized during periods of adverse meteorological conditions when directed by the Department, and

(4) the use of such fuel has been approved in writing by the Department, and the conditions of approval have been agreed to by the applicant in writing. Such conditions of approval may include the installation, operation and maintenance of ambient air monitoring equipment by the applicant in a manner specified by the Department.

REGULATION 6.1

6.1.1 U

No person shall cause, suffer, allow, or permit the emission of smoke which has a shade, density, or appearance equal to or greater than No. 1 of the Chart for a period, or aggregate period of time in excess of six minutes during any one hour, provided that at no time during the said six minutes shall the shade, density, or appearance be equal to or greater than No. 2 of the Chart.

6.1.2 U

No person shall cause, suffer, allow or permit the operation of a facility so as to emit contaminant(s), exclusive of uncombined water or smoke subject to Regulation 6.1.1, of such opacity which, in the opinion of the Department, could be reasonably controlled through the application of modern technology of control and a good Standard Operating Procedure, and in no case, shall exceed 20% opacity for a period or aggregate period of time in excess of 2 minutes during any one hour provided that, at no time during the said 2 minutes shall the opacity exceed 40%.an shall amount to

REGULATION 6.2

6.2.1 U

No person shall cause, suffer, allow, or permit the emission of smoke, from any incinerator, which has a shade, density, or appearance equal to or greater than No. 1 of the Chart at any time.

MASSACHUSETTS

REGULATION 13

13.1 U Any person having control of a facility for which the Department has determined that stack testing is necessary to ascertain compliance with the Department's regulations or design approval provisos shall cause such stack testing:

(a) to be conducted by a person knowledgeable in stack testing,

(b) to be conducted in accordance with procedures approved by the Department,

(c) to be conducted in the presence of a representative of the Department when such is deemed necessary, and

(d) to be summarized and submitted to the Department with analyses and report by an engineer registered in accordance with the provisions of Chapter 112 of the General Laws as amended.the

13.2 U Any person having control of a facility, relative to which the Department determines that stack testing (to ascertain the mass emission rates of air contaminants emitted under various operating conditions) is necessary for the purposes of regulation enforcement or determination of regulation compliance shall cooperate with the Department to provide:

(a) entrance to a location suitable for stack sampling,

(b) sampling ports at locations where representative samples may be obtained,

(c) staging and ladders to support personnel and equipment for performing the tests,

(d) a suitable power source at the sampling location for the operation of sampling equipment, and

(e) such other reasonable facilities as may be requested by the Department.

REGULATION 14.1

14.1 U Upon request by the Department through direct communication or public notice, any person who owns or operates a stationary emission source of a category and class specified by the Department,

(a) shall install, maintain, and use emission monitoring devices, of a design and installation approved by the Department, and

(b) shall make periodic reports to the Department on the nature and amounts of emissions from said source which the Department shall review and correlate for its use in emissions control and exhibit for public information.

PART 3. EMISSION LIMITATIONS AND PROHIBITIONS

R 336.41. Standards for density of emissions.

Rule 41. A person shall not cause or permit to be discharged into the atmosphere from a single source of emission, a visible air contaminant of a density darker than No. 1.0 of the Ringelmann chart or not more than 20% opacity except:

(a) A visible air contaminant of a density not darker than No. 2 of the Ringelmann chart or not more than 40% opacity may be emitted for not more than 3 minutes in any 60 minute period but this emission shall not be permitted on more than 3 occasions during any 24 hour period.

R 336.49. Emission of sulfur dioxide from power plants.

Rule 49. (1) It is unlawful for a person to burn in a power plant fuel which does not comply with either the sulfur content limitation of Table 3, or which when burned results in sulfur dioxide emissions exceeding an equivalent emission rate as shown in Table 4, unless the following conditions are met:

(a) The source of fuel burning is not subject to federal emission standards for new stationary sources.

(b) An installation permit, if required by part 2, was approved by the commission before August 17, 1971.

(c) The user furnishes evidence that the fuel burning does not create, or contribute to, an ambient level of sulfur dioxide in excess of the applicable ambient air quality standards. The evidence shall consist of air quality data or stack dispersion calculations, or both, satisfactory to the commission.

(d) The user is operating in compliance with a voluntary agreement, order, stipulation or variance from the commission.

(2) Notwithstanding the provisions of subrule (1), an exception from the limitations of Table 3 will not be permitted after January 1, 1980 unless specific authorization is granted by the commission.

(3) A person responsible for operation of a source which on the effective date of the 1973 amendment to this rule, or for any anticipated time in the future, is or will be using fuel with a sulfur content in excess of that allowed to be burned on July 1, 1978 as listed in Table 3, or which on such effective date or any anticipated time in the future is or will be emitting sulfur dioxide in excess of the equivalent emission for that fuel as shown in Table 4, shall submit to the commission a written program for compliance with this rule within 60 days after such effective date. This requirement does not apply to a source for which the commission has approved an exception to Table 3 under the provisions of subrule (1).

(4) The program required by subrule (3) shall include the method by which compliance will be achieved, a complete description of new equipment to be installed or modifications to existing equipment to be made and a timetable which specifies, as a minimum, the dates by which: (a) equipment will be ordered, (b) construction or modification of equipment will begin, (c) initial startup of equipment will begin and (d) emissions will be reduced to levels shown in Tables 3 and 4.

(5) The commission may allow any source which is required to submit a compliance program under subrule (3) an extension to the programmed compliance date if the following conditions are met:

(a) The source of fuel burning is not subject to federal emission standards for new stationary sources.

(b) An installation permit, if required by part 2, was approved by the commission before August 17, 1971.

(c) The user furnishes satisfactory evidence to the commission that the fuel burning does not create, or contribute to, an ambient level of sulfur dioxide in excess of the applicable ambient air quality standards.

(6) A person shall not cause or permit the burning of fuel in any fuel burning equipment that results in an average emission of sulfur dioxide for any calendar month at a rate greater than was emitted by that fuel burning equipment for the corresponding calendar month of the year 1970, unless otherwise authorized by the commission.

(7) The use of fuels having sulfur contents as set forth in this rule shall not allow degradation in the mass rate of particulate emission unless otherwise authorized by the commission. The commission may require source emission tests which may be performed by or under the supervision of the commission at the expense of the owners and may require the submission of reports to the commission both before and after changes are made in the sulfur content in fuel.

TABLE 3.

SULFUR IN FUEL LIMITATIONS FOR FUEL BURNING EQUIPMENT

Plant Capacity(a) 1000 lbs. Steam Per Hour	Maximum Sulfur Content in Fuel(b) Percent by Weight(c)	
	July 1, 1975	July 1, 1978
0 - 500	2.0	1.5
Over 500	1.5	1.0

TABLE 4. EQUIVALENT EMISSION RATES

% Sulfur in Fuels(c)	Parts Per Million by Volume Corrected to 50% Excess Air		Pounds of Sulfur Dioxide Per Million BTU of Heat Input	
	Solid Fuel(d) (12,000 BTU/lb)	Liquid Fuel(e) (18,000 BTU/lb)	Solid Fuel(d) (12,000 BTU/lb)	Liquid Fuel(e) (18,000 BTU/lb)
1.0	590	420	1.6	1.1
1.5	890	630	2.4	1.7
2.0	1180	840	3.2	2.2

(a) For the purposes of this rule, plant capacity is defined as the total steam production capacity of all coal and oil burning equipment in a power plant as of August 17, 1971. A power plant is defined as a single structure devoted to steam or electric generation, or both, and may contain multiple boilers.

(b) Maximum sulfur content in fuel is defined as the average sulfur content in all fuels burned at any one time in a power plant. The sulfur content will be calculated on the basis of 12,000 BTU per pound for solid fuels and 18,000 BTU per pound for liquid fuels.

(c) Determination of sulfur content (percent by weight) of fuel shall be carried out in accordance with a procedure acceptable to the commission.

(d) Solid fuels include both pulverized coal and all other coal.

(e) Liquid fuels include distillate oil (No. 1 and No. 2), heavy oil (No. 4, No. 5 and No. 6), and crude oil.

APC 11 Restriction of emission of visible air contaminants.

A. Applicability. The standards of performance in this regulation apply to any emission facility for which a specific standard of performance has not been promulgated in another regulation.

B. Visible emission restrictions for existing facilities. No owner or operator of an existing emission facility to which this regulation is applicable shall cause to be discharged into the atmosphere from the facility any gases which exhibit greater than 20% opacity; except that a maximum of 40% opacity shall be permissible for four minutes in any 60 minute period.

C. Visible emission restrictions for new facilities. No owner or operator of a new emission facility to which this regulation is applicable shall cause to be discharged into the atmosphere from the facility any gases which exhibit greater than 20% opacity.

D. Performance tests. Unless another method is approved by the Agnecy, any person required to submit performance tests for emission facilities for which this regulation is applicable shall utilize Method 9 for visual determination of opacity.

CHAPTER FOUR: APC 4

APC 4 Standards of Performance for Fossil Fuel Burning Indirect Heating Equipment.

C. Standards of Performance for Existing Indirect Heating Equipment.

1. No owner or operator of indirect heating equipment shall cause to be discharged into the atmosphere from said equipment any gases which contain particulate matter or sulfur dioxide in excess of the standards of performance shown in Table I.

2. No owner or operator of indirect heating equipment shall cause to be discharged into the atmosphere from said equipment any gases which exhibit greater than 20% opacity; except that a maximum of 60% opacity shall be permissible for four (4) minutes in any 60 minute period and that a maximum of 40% opacity shall be permissible for four (4) additional minutes in any 60 minute period.

D. Standards of Performance for New Indirect Heating Equipment.

1. No owner or operator of new indirect heating equipment shall cause to be discharged into the atmosphere from said equipment any gases which contain particulate matter, sulfur dioxide or nitrogen oxides in excess of the standards of performance shown in Table II.

2. No owner or operator of new indirect heating equipment or greater than 250 million BTU per hour rated heat input shall cause to be discharged into the atmosphere from said equipment any gases which exhibit greater than 20% opacity; except that a maximum of 40% opacity shall be permissible for not more than two (2) minutes in any 60 minute period.

3. No owner or operator of new indirect heating equipment of 250 million BTU per hour or less rated heat input shall cause to be discharged into the atmosphere from said equipment any gases which exhibit greater than 20% opacity; except that a maximum of 60% opacity shall be permissible for four (4) minutes in any 60 minute period and that a maximum of 40% opacity shall be permissible for four (4) additional minutes in any 60 minute period.

E. Allowance for Stack Height for Indirect Heating Equipment.

1. The owner or operator of any indirect heating equipment shall determine and install a stack of such height that will not cause pollutant concentrations at ground levels to exceed any applicable ambient air quality standard or regulation.

2. The determination of the ground level concentrations shall be based upon applicable dispersion calculations approved by the Agency.

F. High Heating Value. The High Heating Value of a fossil fuel shall mean the same as the Gross Heating Value.

G. Performance Test Methods. Unless another method is approved by the Director, any person required to submit performance tests for indirect heating equipment shall utilize the following test methods:

1. Method 1 for selection of sampling site and sample traverses.

2. Method 3 for gas analysis.

3. Method 5 for concentration of particulate matter and the associated moisture content.

4. Method 6 for concentration of SO_2.

5. Method 7 for concentration of NO_x.

6. Method 9 for visual determination of opacity.

H. Performance Test Procedures.

1. The sampling site, as selected by Method 1, shall be the same for each pollutant during a performance test.

2. For Method 5, the sampling time for each run shall be at least 60 minutes and the minimum sampling volume shall be 0.85 dscm (30 dscf) except that smaller sampling times or volumes, when necessitated by process variables or other factors, may be approved by the Agency. The probe and filter holder heating systems in the sampling train shall be set to provide a gas temperature between 120°C and 160°C (250°F and 320°F).

3. For Methods 6 and 7, the sampling point in the duct shall be at the center of the cross section or at a point no closer to the walls than 1 m (3.28 ft.). For Method 6 the sample shall be extracted at a rate proportional to the gas velocity at the sampling point.

4. For Method 6, the minimum sampling time shall be 20 minutes and the minimum sampling volume 0.02 dscm (0.71 dscf) for each sample. The arithmetic mean of two samples shall constitute one run. Samples shall be taken at approximately 30-minute intervals.

5. For Method 7, each run shall consist of at least four grab samples taken at approximately 15-minute intervals. The arithmetic mean of the samples shall constitute the run value.

6. For each performance test, the emissions expressed in g/million cal (lb/million BTU) shall be determined by the following procedure if the actual heat input is used:

$$E = CF\left(\frac{20.90}{20.9 - \%O_2}\right)$$

where:

a. E = pollutant emission, g/million cal (lb/million BTU).

b. C = pollutant concentration, g/dscm (lb/dscf), determined by Methods 5, 6 or 7.

c. $\%O_2$ = oxygen content by volume (expressed as percent), dry basis. Percent oxygen shall be determined by using the integrated sampling procedures of Method 3 and by analyzing the sample with a continuous monitoring system, or with the Orsat analyzer. The sample shall be obtained as follows:

(1) For determination of sulfur dioxide and nitrogen oxides emissions, the oxygen sample shall be obtained at approximately the same point in the duct as used to obtain the samples for Methods 6 and 7 determinations, respectively.

(2) For determination of particulate emissions, the oxygen sample shall be obtained simultaneously by traversing the duct at the same sampling location used for each run of Method 5, in accordance with Method 1, except that 12 sample points shall be used in all cases.

d. F = factor representing a ratio of the volume of dry flue gases generated to the calorific value of the fuel combusted. Values of F are given as follows:

(1) For anthracitic coal according to A.S.T.M. D388-66, F = 0.01139 dscm/10^4 cal (101.4 dscf/10^4 BTU).

(2) For subbituminous and bituminous coal according to A.S.T.M. D388-66, F = 0.01103 dscm/10^4 cal (98.2 dscf/10^4 BTU).

(3) For liquid fossil fuels including crude, residual, and distillate oils, F = 0.01036 dscm/10^4 cal (92.2 dscf/10^4 BTU).

(4) For gaseous fossil fuels including natural gas, propane, and butane, F = 0.00982 dscm/10^4 cal (87.4 dscf/10^4 BTU).

e. An owner or operator may use the following equation to determine an F factor (dscf/10^4 BTU) in lieu of the F factors specified by paragraph 6.d. of this section:

$$F = \frac{10^6\ 3.64(\%H) + 1.53(\%C) + 0.57(\%S) + .14(\%N) - .46(\%O)}{GHV}$$

where:

(1) H, C, S, N and O are content by weight of hydrogen, carbon, sulfur, nitrogen, and oxygen (expressed as percent), respectively, as determined by ultimate analysis of the fuel fired, dry basis, using A.S.T.M. methods D3178-74 or D3176 (solid fuels) or D240-64(73) (liquid fuels) or computed from results using A.S.T.M. method D1137-53(70), D1945-64(73) or D1946-67(72) (gaseous fuels) as applicable.

(2) GHV is the gross heating value.

f. When combinations of fuels are fired, the F factors determined by paragraph 6.d. or e. of this section shall be prorated in accordance with the following formula:

$$F = \frac{xF_1 + yF_2 + zF_3}{100}$$

where:

x = the percentage of total heat input derived from gaseous fossil fuel.

y = the percentage of total heat input derived from liquid fossil fuel.

z = the percentage of total heat input derived from solid fossil fuel.

F_1 = the value of F for gaseous fossil fuels according to subsection 6.d. or e. of this regulation.

F_2 = the value of F for liquid fossil fuels according to subsection 6.d. or e. of this regulation.

F_3 = the value of F for solid fossil fuels according to subsection 6.d. or e. of this regulation.

g. When combinations of fossil fuels are fired, the actual heat input, expressed in cal/hr (BTU/hr), shall be determined during each testing period. The rate of fuels burned during each testing period shall be determined by suitable methods and shall be confirmed by a material balance over the indirect heating system.

7. For each performance test, the emissions expressed in g/million cal (lb/million BTU) shall be determined by the following procedure if the rated heat input is used:

$$E = \frac{E_t}{Z}$$

where:

E = pollutant emissions, g/million cal (lb/million BTU).

E_t = pollutant emission rate, g/hr (lb/hr), determined by Method 5.

Z = applicable heat input, million cal/hr (million BTU/hr).

8. The rated heat input shall be used only in determining the amount of particulate matter emitted from existing indirect heating equipment. The actual heat input shall be u in determining the amount of sulfur dioxide emitted from existing indirect heating equipment. The actual heat input shall be used in conducting performance tests for all pollutants for new indirect heating equipment.

TABLE I — EXISTING SOURCES

RATED HEAT INPUT OF THE INDIRECT HEATING EQUIPMENT Million BTU/Hr.	RATED HEAT INPUT OF ALL DIRECT AND INDIRECT HEATING EQUIPMENT AT THE PARTICULAR LOCATION Million BTU/Hr.	EMISSION LIMITATIONS LBS. PER MILLION BTU Particulate Matter All Fuels	SO_2 Solid Fuels	SO_2 Liquid Fuels
A. Within Minneapolis-St. Paul Air Quality Control Region				
Greater than 250	Greater than 250	0.4	3.0	1.6
Less than or equal to 250	Greater than 250	0.4	3.0	1.6
Less than or equal to 250	Less than or equal to 250	0.4	4.0	2.0
B. Within the City of Duluth				
Greater than 250	Greater than 250	0.4	4.0	2.0
Less than or equal to 250	Greater than 250	0.4	4.0	2.0
Less than or equal to 250	Less than or equal to 250	0.4	N.A.	N.A.
C. Outside Minneapolis-St. Paul Air Quality Control Region and Outside the City of Duluth				
Greater than 250	Greater than 250	0.6	4.0	2.0
Less than or equal to 250	Greater than 250	0.6	4.0	2.0
Less than or equal to 250	Less than or equal to 250	0.6	N.A.	N.A.

* N.A. — Not applicable

TABLE II — NEW SOURCES

RATED HEAT INPUT OF THE INDIRECT HEATING EQUIPMENT Million BTU/Hr.	RATED HEAT INPUT OF ALL DIRECT AND INDIRECT HEATING EQUIPMENT AT THE PARTICULAR LOCATION Million BTU/Hr.	EMISSION LIMITATIONS LBS. PER MILLION BTU					
		Particulate Matter All Fuels	SO_2 Solid Fuels	SO_2 Liquid Fuels	NO_x* Solid Fuels	NO_x* Gaseous Fuels	NO_x* Liquid Fuels
A. Within Minneapolis-St. Paul Air Quality Control Region							
Greater than 250	Greater than 250	0.1	1.2	0.8	0.7	0.2	0.3
Greater than 100 but less than or equal to 250	Greater than 250	0.1	3.0	1.6	N.A.**	N.A.	N.A.
Less than or equal to 100	Greater than 250	0.4	3.0	1.6	N.A.	N.A.	N.A.
Less than or equal to 250	Less than or equal to 250	0.4	4.0	2.0	N.A.	N.A.	N.A.
B. Within the City of Duluth							
Greater than 250	Greater than 250	0.1	1.2	0.8	0.7	0.2	0.3
Greater than 100 but less less than or equal to 250	Greater than 250	0.1	4.0	2.0	N.A.	N.A.	N.A.
Less than or equal to 100	Greater than 250	0.4	4.0	2.0	N.A.	N.A.	N.A.
Less than or equal to 250	Less than or equal to 250	0.4	N.A.	N.A.	N.A.	N.A.	N.A.
C. Outside Minneapolis-St. Paul Air Quality Control Region and Outside the City of Duluth							
Greater than 250	Greater than 250	0.1	1.2	0.8	0.7	0.2	0.3
Less than or equal to 250	Greater than 250	0.4	4.0	2.0	N.A.	N.A.	N.A.
Less than or equal to 250	Less than or equal to 250	0.4	N.A.	N.A.	N.A.	N.A.	N.A.

* NO_x expressed as NO_2

**N.A. — Not applicable

C. Standards of Performance for Fossil Fuel-Burning Direct Heating Equipment.

1. Particulate limitations.

a. No owner or operator of any direct heating equipment shall cause to be discharged into the atmosphere from the direct heating equipment any gases which:

(1) Contain particulate matter in excess of the limits allowed by Minnesota Regulation APC 5, or

(2) Exhibit greater than 20% opacity, except that a maximum of 60% opacity shall be permissible for four minutes in any 60 minute period and that a maximum of 40% opacity shall be permissible for four additional minutes in any 60 minute period.

2. Sulfur oxide limitations.

a. Within Minneapolis-St. Paul air quality control region. No owner or operator of direct heating equipment located within the Minneapolis-St. Paul Air Quality Control Region shall cause to be discharged into the atmosphere from such equipment any gases which contain sulfur dioxide:

(1) In excess of 3 pounds per million BTU heat input if a solid fossil fuel is burned or 1.6 pounds per million BTU heat input if a liquid fossil fuel is burned, if the total rated heat input of all indirect and direct heating equipment of the owner or operator at that particular location exceeds 250 million BTU per hour.

(2) In excess of 4 pounds per million BTU heat input if a solid fossil fuel is burned or 2 pounds per million BTU heat input if a liquid fossil fuel is burned, if the total rated heat input of all indirect and direct heating equipment of the owner or operator at that particular location is equal to or less than 250 million BTU per hour.

b. Outside Minneapolis-St. Paul air quality control region. No owner or operator of direct heating equipment located outside the Minneapolis-St. Paul Air Quality Control Region shall cause to be discharged into the atmosphere from such equipment any gases which contain sulfur dioxide in excess of 4 pounds per million BTU heat input if a solid fossil fuel is burned or 2 pounds per million BTU heat input if a liquid fossil fuel is burned, if the total rated heat input of all indirect and direct heating equipment of the owner or operator at that particular location is greater than 250 million BTU per hour.

D. Performance Test Methods. Unless another method is approved by the Agency, any person required to submit performance tests for direct heating equipment shall utilize the following test methods:

1. Method 1 for selection of sampling site and sample traverses.
2. Method 3 for gas analysis.
3. Method 5 for concentration of particulate matter and the associated moisture content.
4. Method 6 for concentration of SO_2.
5. Method 9 for visual determination of opacity.

E. Performance Test Procedures.

1. The sampling site, as selected by Method 1, shall be the same for each pollutant during a performance test.

2. For Method 5, the sampling time for each run shall be at least 60 minutes and the minimum sampling volume shall be 0.85 dscm (30 dscf) except that smaller sampling times or volumes, when necessitated by process variables or other factors, may be approved by the Agency. The probe and filter holder heating systems in the sampling train shall be set to provide a gas temperature between 120°C and 160°C (250°F and 320°F).

3. For Method 6, the sampling point in the duct shall be at the center of the cross section or at a point no closer to the walls than 1 m (3.28 ft.). The sample shall be extracted at a rate proportional to the gas velocity at the sampling point.

4. For Method 6, the minimum sampling time shall be 20 minutes and the minimum sampling volume 0.02 dscm (0.71 dscf) for each sample. The arithmetic mean of two samples shall constitute one run. Samples shall be taken at approximately 30-minute intervals.

5. For each performance test for sulfur dioxide emissions, the emissions expressed in g/million cal (lb/million BTU) shall be determined by the following procedure if the actual heat input is used:

$$E = CF\left(\frac{20.90}{20.9 - \%O_2}\right)$$

where:

a. E = pollutant emission, g/million cal (lb/million BTU).

b. C = pollutant concentration, g/dscm (lb/dscf),

c. $\%O_2$ = oxygen content by volume (expressed as percent), dry basis. Percent oxygen shall be determined by using the integrated sampling procedures of Method 3 or with the Orsat analyzer. The sample shall be obtained at approximately the same point in the duct as used to obtain the samples for Method 6.

APC 3

d. F = factor representing a ratio of the volume of dry flue gases generated to the calorific value of the fuel combusted. Values of F are given as follows:

(1) For anthracitic coal according to A.S.T.M. D388-66, F = 0.01139 dscm/10^4 cal (101.4 dscf/10^4 BTU).

(2) For subbituminous and bituminous coal according to A.S.T.M. D388-66, F = 0.01103 dscm/10^4 cal (98.2 dscf/10^4 BTU).

(3) For liquid fossil fuels including crude, residual, and distillate oils, F = 0.01036 dscm/10^4 cal (92.2 dscf/10^4 BTU).

(4) For gaseous fossil fuels including natural gas, propane, and butane, F = 0.00982 dscm/10^4 cal (87.4 dscf/10^4 BTU).

e. An owner or operator may use the following equation to determine an F factor (dscf/10^4 BTU) in lieu of the F factors specified by paragraph 5.d. of this section:

$$F = \frac{10^6\ 3.64(\%H) + 1.53(\%C) + 0.57(\%S) + 0.14(\%N) - 0.46(\%)}{GHV}$$

where:

(1) H, C, S, N, and O are content by weight of hydrogen, carbon, sulfur, nitrogen, and oxygen (expressed as percent), respectively, as determined by ultimate analysis of the fuel fired, dry basis, using A.S.T.M. methods D3178-74 or D3176 (solid fuels) or D240-64(73) (liquid fuels) or computed from results using A.S.T.M. method D1137-53(70), D1945-64(73) or D1946-67(72) (gaseous fuels) as applicable.

(2) GHV is the gross heating value.

f. When combinations of fuels are fired, the F factors determined by paragraph 5.d. or e. of this section shall be prorated in accordance with the following formula:

$$F = \frac{xF_1 + yF_2 + zF_3}{100}$$

where:

x = the percentage of total heat input derived from gaseous fossil fuel.

y = the percentage of total heat input derived from liquid fossil fuel.

z = the percentage of total heat input derived from solid fossil fuel.

F_1 = the value of F for gaseous fossil fuels according to subsection 5.d. or e. of this regulation.

F_2 = the value of F for liquid fossil fuels according to subsection 5.d. or e. of this regulation.

F_3 = the value of F for solid fossil fuels according to subsection 5.d or e. of this regulation.

g. When combinations of fossil fuels are fired, the actual heat input, expressed in cal/hr (BTU/hr), shall be determined during each testing period. The rate of fuels burned during each testing period shall be determined by suitable methods and shall be confirmed by a material balance over the direct heating system.

APC 5

(c) Standards of Performance for Pre 1969 Industrial Process Equipment

(1) No owner or operator of any industrial process equipment which was in operation before July 9, 1969, shall cause to be discharged into the atmosphere from the industrial process equipment any gases which:

(aa) In any one hour contain particulate matter in excess of the amount permitted in Table 1 for the allocated process weight; provided that the owner or operator shall not be required to reduce the particulate matter emission below the concentration permitted in Table 2 for the appropriate source gas volume; provided further that regardless of the mass emission permitted by Table 1, the owner or operator shall not be permitted to emit particulate matter in a concentration in excess of 0.30 grains per standard cubic foot of exhaust gas; or

APC 5

(bb) Exhibit greater than 20 percent opacity, except that a maximum of 60 percent opacity shall be permissible for 4 minutes in any 60 minute period and a maximum of 40 percent opacity shall be permissible for 4 additional minutes in any 60 minute period.

(2) The owner or operator of any industrial process equipment which was in operation before July 9, 1969, which has control equipment with a collection efficiency of not less than 99 percent by weight shall be considered in compliance with the requirements of subsection (c)(1)(aa) of this regulation.

(3) The owner or operator of any industrial process equipment which was in operation before July 9, 1969, which is located outside the Minneapolis-St. Paul Air Quality Control Region and the City of Duluth, which is located not less than one-fourth mile from any residence or public roadway, and which has control equipment with a collection efficiency of not less than 85 percent by weight, and the operation of the entire emission facility does not cause a violation of the ambient air quality standards, shall be considered in compliance with the requirements of subsection (c)(1)(aa) of this regulation.

(d) Standards of Performance for Post 1969 Industrial Process Equipment

(1) No owner or operator of any industrial process equipment which was not in operation before July 9, 1969, shall cause to be discharged into the atmosphere from the industrial process equipment any gases which:

(aa) In any one hour contain particulate matter in excess of the amount permitted in Table 1 for the allocated process weight; provided that the owner or operator shall not be required to reduce the particulate matter emission below the concentration permitted in Table 2 for the appropriate source gas volume; provided that regardless of the mass emission permitted by Table 1, the owner or operator shall not be permitted to emit particulate matter in a concentration in excess of 0.30 grains per standard cubic foot of exhaust gas; or

(bb) Exhibit greater than 20 percent opacity.

(2) The owner or operator of any industrial process equipment which was not in operation before July 9, 1969, which has control equipment with a collection efficiency of not less than 99.7 percent by weight shall be considered in compliance with the requirements of subsection (d)(1)(aa) of this regulation.

(3) The owner or operator of any industrial process equipment which was in operation after July 9, 1969, which is located outside the Minneapolis-St. Paul Air Quality Control Region and the City of Duluth, which is located not less than one-fourth mile from any residence or public roadway, and which has control equipment with a collection efficiency of not less than 85 percent by weight, and the operation of the entire emission facility does not cause a violation of the ambient air quality standards, shall be considered in compliance with the requirements of subsection (d)(1)(aa) of this regulation.

(e) Performance Test Methods. Unless another method is approved by the Agency, any owner or operator required to submit performance tests for any industrial process equipment shall utilize the following test methods:

(1) Method 1 for sample and velocity traverses,

(2) Method 2 for velocity and volumetric flow rate,

(3) Method 3 for gas analysis,

APC 7

(4) No owner or operator of an existing incinerator of any burning capacity shall cause or permit the emission of smoke or any other air contaminant which is:

(aa) Greater than 20 percent opacity

(bb) Except that a maximum of 40 percent opacity shall be permissible for four (4) minutes in any 60 minute period.

(5) No owner or operator of a new incinerator of any burning capacity shall cause or permit the emission of smoke or any other contaminant which is:

(aa) Greater than 20 percent opacity.

APC 7

(e) Performance Test Methods. Unless another method is approved by the Agency, any owner or operator required to submit performance tests for an incinerator shall utilize the following methods (defined in APC 2):

(1) Method 5 for the concentration of particulate matter and the associated moisture content.

(2) Method 1 for sample and velocity traverses.

(3) Method 2 for velocity and volumetric flow rate.

(4) Method 3 for gas analysis and calculation of excess air, using the integrated sample technique.

(5) Method 9 for visual determination of opacity.

(f) Performance Test Procedures

APC 12

(f) Standards of Performance for Stationary Internal Combustion Engines

(1) No owner or operator of any stationary internal combustion engine shall cause or permit the emission of visible air contaminants from the engine in excess of 20 percent opacity for more than ten (10) consecutive seconds once operating temperatures have been obtained.

APC 15

(b) Standards of Performance of Existing Sulfuric Acid Production Units

(1) Prior to July 1, 1977, no owner or operator of an existing sulfuric acid production unit shall cause to be discharged into the atmosphere from any sulfuric acid production unit any gases which contain sulfur dioxide in excess of 42 pounds per ton of acid produced (21 kg per metric ton), production being expressed as 100 percent H_2SO_4.

(2) After July 1, 1977, no owner or operator of an existing sulfuric acid production unit shall cause to be discharged into the atmosphere from any sulfuric acid production unit any gases which contain sulfur dioxide in excess of 30 pounds per ton of acid produced (15 kg per metric ton), production being expressed as 100 percent H_2SO_4.

(3) No owner or operator of an existing sulfuric acid production unit shall cause to be discharged into the atmosphere from any sulfuric acid production unit any gases which contain acid mist, expressed as H_2SO_4, in excess of 1.70 pounds per ton of acid produced (0.85 kg per metric ton), the production being expressed as 100 percent H_2SO_4.

(c) Standards of Performance for New Sulfuric Acid Production Units

(1) No owner or operator of a new sulfuric acid production unit shall cause to be discharged into the atmosphere from any sulfuric acid production unit any gases which contain sulfur dioxide in excess of 4 pounds per ton of acid produced (2 pounds per metric ton), the production being expressed as 100 percent H_2SO_4.

(2) No owner or operator of a new sulfuric acid production unit shall cause to be discharged into the atmosphere from any sulfuric acid production unit any gases which:

(i) Contain acid mist, expressed as H_2SO_4, in excess of 0.15 pounds per ton of acid produced (0.075 kg per metric ton), the production being expressed as 100 percent H_2SO_4; or

(ii) Exhibit 10 percent opacity, or greater.

(d) Continuous Emision Monitoring

(1) The owner or operator of a sulfuric acid production unit shall install, calibrate, maintain, and operate an instrument for continuously monitoring and recording emissions of sulfur dioxide.

(2) The pollutant gas used to prepare calibration gas mixtures and for calibration check shall be sulfur dioxide.

(3) When conducting monitoring system performance evaluations only the sulfur dioxide portion of the Method 8 results shall be used.

(4) The span shall be set at 1,000 ppm of sulfur dioxide.

(5) The owner or operator of a sulfuric acid production unit shall establish a conversion factor for the purpose of converting monitoring data into units of the applicable standard (kg/metric ton, lb/short ton). The conversion factor shall be determined, as a minimum, three times daily by measuring the concentration of sulfur dioxide entering the converter using suitable methods (e.g., the Reich test, National Air Pollution Control Administration Publication No. 999-AP-13) and calculating the appropriate conversion factor for each eight-hour period as follows:

$$CF = k \left[\frac{1{,}000 - 0.015r}{r - s} \right]$$

where:

CF = conversion factor (kg/metric ton per ppm, lb/short ton per ppm).

k = constant derived from material balance. For determining CF in metric units, k = 0.0653. For determining CF in English units, k = 0.1306.

r = percentage of sulfur dioxide by volume entering the gas converter. Appropriate corrections must be made for air injection.

s = percentage of sulfur dioxide by volume in the emissions to the atmosphere determined by the continuous monitoring system required under paragraph (d)(1) of this regulation.

(6) The owner or operator of a sulfuric acid production unit shall record all conversion factors and values under subparagraph (5) above, i.e., CF, r, and s.

(7) The owner or operator of a sulfuric acid production unit shall record daily the production rate and hours of operation.

(8) For the purpose of reports under APC-21(c)(1)(bb)(ii), periods of excess emissions shall be all three-hour periods (or the arithmetic average of three consecutive one-hour periods) during which the integrated average sulfur dioxide emissions exceed the applicable standards under this regulation.

(e) Performance Test Methods. Unless another method is approved by the Director, any person required to submit performance tests for a sulfuric acid production unit shall utilize the following test methods:

(1) Method 8 for the concentrations of SO_2 and acid mist;

(2) Method 1 for sample and velocity traverses;

(3) Method 2 for velocity and volumetric flow rate; and

(4) Method 3 for gas analysis.

(f) Performance Test Procedures

(1) In testing for sulfur dioxide and acid mist, the sampling time for each run shall be at least 60 minutes and the minimum sample volume shall be 40.6 dscf (1.15 dscm) except that smaller sampling times or sample volumes, when necessitated by process variables or other factors, may be approved by the Agency.

APC 16

(b) Standards of Performance for Existing Nitric Acid Production Units

(1) Prior to July 1, 1977, no owner or operator of an existing nitric acid production unit shall cause to be discharged into the atmosphere from any nitric acid production unit any gases which contain nitrogen oxides, expressed as NO_2, in excess of 50 pounds per ton of acid produced (25 kg per metric ton), the production being expressed as 100 percent nitric acid.

(2) After July 1, 1977, no owner or operator of an existing nitric acid production unit shall cause to be discharged into the atmosphere from any nitric acid production unit any gases which contain nitrogen oxides, expressed as NO_2, in excess of 40 pounds per ton of acid produced (20 kg per metric ton), the production being expressed as 100 percent nitric acid.

(3) No owner or operator of an existing nitric acid production unit shall cause to be discharged into the atmosphere from any nitric acid production unit any gases which exhibit greater than 10 percent opacity.

(c) Standards of Performance for New Nitric Acid Production Units. No owner or operator of a new nitric acid production unit shall cause to be discharged into the atmosphere from the nitric acid production unit any gases which:

(1) Contain nitrogen oxides, expressed as NO_2, in excess of 3.0 lb. per ton of acid produced (1.5 kg per metric ton), the prodction being expressed as 100 percent nitric acid,

(2) Exhibit 10 percent opacity, or greater.

(d) Emission Monitoring

(1) The owner or operator of a nitric acid production unit shall install, calibrate, maintain, and operate a continuous monitoring system for the measurement and recording of nitrogen oxides emisisons.

(2) The pollutant gas used to prepare calibration gas mixtures and for calibration checks shall be nitrogen dioxide (NO_2).

(3) Reference Method 7 shall be used for conducting monitoring system performance evaluations.

(4) The span shall be set at 500 ppm of nitrogen dioxide.

(5) The owner or operator of a nitric acid plant shall establish a conversion factor for the purpose of converting monitoring data into units of the applicable standard (kg/metric ton, lb/ton). The conversion factor shall be established by measuring emissions with the continuous monitoring system concurrent with measuring emissions with the applicable reference method tests. Using only that portion of the continuous monitoring emission data that represents emission measurements concurrent with the reference method test periods, the conversion factor shall be determined by dividing the reference method test data averages by the monitoring data averages to obtain a ratio expressed in units of the applicable standard to units of the monitoring data, i.e., (kg/metric ton per ppm, lb/ton per ppm). The conversion factor shall be reestablished during any performance test or any continuous monitoring system performance evaluation.

(6) The owner or operator of a nitric acid production unit shall record the daily production rate and hours of operation.

(7) For the purpose of reports under APC-21(c)(1)(bb)(ii), periods of excess emissions that shall be reported are defined as any three-hour period during which the average nitrogen oxides emissions (arithmetic average of three contiguous one-hour periods) as measured by a continuous monitoring system exceed the applicable standards under this regulation.

(e) Performance Test Methods. Unless another method is approved by the Director, any person required to submit performance tests for a nitric acid production unit shall utilize the following test methods:

(1) Method 7 for the concentration of NO_2;

(2) Method 1 for sample and velocity traverses;

(3) Method 2 for velocity and volumetric flow rate; and

(4) Method 3 for gas analysis.

(f) Performance Test Procedures

(1) For Method 7, the same site shall be selected according to Method 1 and the sampling point shall be the centroid of the stack or duct or at a point no closer to the walls than 1 m (3.28 ft). Each run shall consist of at least four grab samples taken at approximately 15-minutes intervals. The arithmetic mean of the samples shall constitute the run value. A velocity traverse shall be performed once per run.

(2) Acid production rate, expressed in metric tons per hour of 100 percent nitric acid, shall be determined during each testing period by suitable methods and shall be confirmed by a material balance over the production system.

(3) For each run, nitrogen oxides, expressed in lb/ton of 100 percent nitric acid (g/metric ton), shall be determined by dividing the emission rate in lb/hr (g/hr) by the acid production rate. The emission rate shall be determined by the equation,

$$\text{lb/hr} = Q_s \times c$$

where Q_s = volumetric flow rate of the effluent in dscf/hr (dscm/hr), as determined in accordance with paragraph (e)(3) of this section, and $c = NO_2$ concentration in lb/dscf (g/dscm), as determined in accordance with subsection (e)(1) of this regulation.

[April 13, 1972; amended December 18, 1975]

CHAPTER TWENTY-ONE: APC 21

APC 21 Emission Source Monitoring, Performance Tests, Reports, Shutdowns and Breakdowns

(a) Continuous Monitoring

(1) Monitoring Requirement. The owner or operator of any emission facility, whether or not continuous monitoring is required by another regulation, may be required to establish a continuous monitoring system, upon order of the Director, when in his judgment other methods of measurement or calculation do not provide adequate information on the level or variation of emissions to assure compliance with applicable regulations.

(2) Monitoring System Qualifications. Any owner or operator of an emission facility who is required by applicable regulation or by order of the Director to install a continuous monitoring system shall install a system which meets the following performance evaluations:

(aa) Continuous monitoring systems for measuring opacity of emissions shall comply with Performance Specification 1.

(bb) Continuous monitoring systems for measuring nitrogen oxides emissions shall comply with Performance Specification 2.

(cc) Continuous monitoring systems for measuring sulfur dioxide emissions shall comply with Performance Specification 2.

(dd) Continuous monitoring systems for measuring the oxygen content or carbon dioxide content of effluent gases shall comply with Performance Specification 3.

(3) Performance Evaluation. The Agency or the Director may order any owner or operator who has installed a continuous monitoring system to conduct performance evaluations of the system. The performance evaluations shall be conducted under such conditions as the Agency or the Director may impose.

(4) Old Monitoring Systems. Any owner or operator of an emission facility who installed or entered into a binding contract to purchase a specific continuous monitoring system prior to September 11, 1974, may be exempt from meeting the performance evaluations set forth in paragraph (2) provided the following requirements are met:

(aa) Continuous monitoring systems for measuring opacity of emissions shall be capable of measuring emission levels within ±20 percent of the correct value with a confidence level of 95 percent. The Calibration Error Test and associated calculation procedures set forth in Performance Specification 1 shall be used for demonstrating compliance with this specification.

(bb) Continuous monitoring systems for measurement of nitrogen oxides or sulfur dioxide shall be capable of measuring emission levels within ±20 percent of the correct value with a confidence level of 95 percent. The Calibration Error Test, the Field Test for Accuracy (Relative), and associated operating and calculation procedures set forth in Performance Specification 2 shall be used for demonstrating compliance with this specification.

All continuous monitoring systems installed under this paragraph shall be upgraded or replaced with new continuous monitoring systems which comply with the performance evaluations set forth in paragraph (2) by September 11, 1979.

(5) Zero and Span Drift. Owners or operators who are required to install continuous monitoring systems shall check the zero and span drift at least once daily in accordance with the method prescribed by the manufacturer of such systems unless the manufacturer recommends adjustments at shorter intervals, in which case such recommendations shall be followed. The zero and span shall, as a minimum, be adjusted whenever the 24-hour zero drift or 24-hour calibration drift limits of the performance specifications in Performance Specification 1, 2, or 3, whichever is applicable, are exceeded. For continuous monitoring systems measuring opacity of emissions, the optical surfaces exposed to the effluent gases shall be cleaned prior to performing the zero or span drift adjustments except that for systems using automatic zero adjustments, the optical surfaces shall be cleaned when the cumulative automatic zero compensation exceeds four percent opacity. Unless otherwise approved by the Agency, the following procedures, as applicable, shall be followed:

(aa) For extractive continuous monitoring systems measuring gases, minimum procedures shall include introducing applicable zero and span gas mixtures into the measurement system as near the probe as is practical. Span and zero gases certified by their manufacturer to be traceable to National Bureau of Standards reference gases shall be used whenever these reference gases are available. The span and zero gas mixtures shall be the same composition as specified in Performance Specification 1, 2, or 3, whichever is applicable. Every six months from date of manufacture, span and zero gases shall be reanalyzed by conducting triplicate analyses with Reference Method 6 for SO_2, Reference Method 7 for NO_x, and Reference Method 3 for O_2 and CO_2, respectively. The gases may be analyzed at less frequent intervals if longer shelf lives are guaranteed by the manufacturer.

(bb) For non-extractive continuous monitoring systems measuring gases, minimum procedures shall include upscale check(s) using a certified calibration gas cell or test cell which is functionally equivalent to a known gas concentration. The zero check may be performed by computing the zero value from upscale measurements or by mechanically producing a zero condition.

(cc) For continuous monitoring systems measuring opacity of emissions, minimum procedures shall include a method for producing a simulated zero opacity condition and an upscale (span) opacity condition using a certified neutral density filter or other related technique to produce a known obscuration of the light beam. Such procedures shall provide a system check of the analyzer internal optical surfaces and all electronic circuitry including the lamp and photodetector assembly.

(6) Operation Requirements. Except for system breakdowns, repairs, calibration checks, and zero and span adjustments, all continuous monitoring systems shall be in continuous operation and shall meet minimum frequency of operation requirements as follows:

(aa) Opacity. All continuous monitoring systems for measuring opacity of emissions shall complete a minimum of one cycle of operation (sampling, analyzing, and data recording) for each successive 10-second period.

(bb) Other pollutants.

(i) All continuous monitoring systems, except those old systems installed under paragraph (4), for measuring oxides of nitrogen, sulfur dioxide, carbon dioxide, or oxygen shall complete a minimum of one cycle of operation (sampling, analyzing, and data recording) for each successive 15-minute period.

(ii) All old continuous monitoring systems installed under paragraph (4) for measuring oxides of nitrogen, sulfur dioxide, carbon dioxide, or oxygen shall complete a minimum of one cycle of operation (sampling, analyzing, and data recording) for each successive one-hour period.

(7) Location of System. All continuous monitoring systems or monitoring devices shall be installed such that representative measurements of emissions or process parameters from the affected facility are obtained. Additional procedures for location of continuous monitoring systems contained in the applicable Performance Specifications shall be used.

(8) Number of Sources of Emissions. When the effluents from a single affected facility or two or more affected facilities subject to the same emission standards are combined before being released to the atmosphere, the owner or operator may install applicable continuous monitoring systems on each effluent or on the combined effluent. When the affected facilities are not subject to the same emission standards, separate continuous monitoring systems shall be installed on each effluent. When the effluent from one affected facility is released to the atmosphere through more than one point, the owner or operator shall install applicable continuous monitoring systems on each separate effluent unless the installation of fewer systems is approved by the Agency.

(9) Monitoring Data. Owners or operators of all continuous monitoring systems for measurement of opacity shall reduce all data to one-minute averages and for systems other than opacity to one-hour averages respectively. One-minute opacity averages shall be calculated from 4 or more data points equally spaced over each one-minute period. For systems other than opacity, one-hour averages shall be computed from four or more data points equally spaced over each one-hour period. Data recorded during periods of system breakdowns, repairs, calibration checks, and zero and span adjustments shall not be included in the data averages computed under this paragraph. An arithmetic or integrated average of all data may be used. The data output of all continuous monitoring systems may be recorded in reduced or non-reduced form (e.g. ppm pollutant and percent O_2 or lb/million Btu of pollutant). All excess emissions shall be converted into units of the standard using the conversion procedures specified in the applicable regulation. After conversion into units of the standard, the data may be rounded to the same number of significant digits used in the regulation to specify the applicable standard (e.g. rounded to the nearest one percent opacity).

(10) Exceptions. Upon written application by an owner or operator, the Director may approve alternatives to any monitoring procedures or requirements including, but not limited to, the following:

(aa) Alternative monitoring requirements when installation of a continuous monitoring system or monitoring device specified by this part would not provide accurate measurements due to liquid water or other interferences caused by substances with the effluent gases.

(bb) Alternative monitoring requirements when the affected facility is infrequently operated.

(cc) Alternative monitoring requirements to accommodate continuous monitoring systems that require additional measurements to correct for stack moisture conditions.

(dd) Alternative locations for installing continuous monitoring systems or monitoring devices when the owner or operator can demonstrate that installation at alternate locations will enable accurate and representative measurements.

(ee) Alternative methods of converting pollutant concentration measurements to units of the standards.

(ff) Alternative procedures for performing daily checks of zero and span drift that do not involve use of span gases or test cells.

(gg) Alternatives to the A.S.T.M. test methods or sampling procedures specified by any regulation.

(hh) Alternative continuous monitoring systems that do not meet the design or performance requirements in Performance Specification 1 but adequately demonstrate a definite and consistent relationship between its measurements and the measurements of opacity by a system complying with the requirements in Performance Specification 1. The Director may require that such demonstration be performed for each affected facility.

(ii) Alternative monitoring requirements when the effluent from a single affected facility or the combined effluent from two or more affected facilities are released to the atmosphere through more than one point.

(b) Performance Tests

(1) Testing Requirements. The Agency or the Director may order the owner or operator of an emission facility to conduct or have conducted performance tests to determine the characteristics and amount of emissions of air contaminants from any affected facility.

(2) Test Method. Unless another method is specified in an applicable regulation, any owner or operator required to conduct performance tests shall utilize the following methods:

(aa) Method 1 for sample and velocity traverses.

(bb) Method 2 for stack gas velocity and volumetric flow rate.

(cc) Method 3 for gas analysis for carbon dioxide, excess air, and dry molecular weight.

(dd) Method 4 for moisture in stack gases.

(ee) Method 5 for concentration of particulate matter and associated moisture content.

(ff) Method 6 for concentration of sulfur dioxide.

(gg) Method 7 for concentration of nitrogen oxides.

(hh) Method 8 for concentration of sulfuric acid mist and sulfur dioxide.

(ii) Method 9 for opacity.

(jj) Method 10 for concentration of carbon monoxide.

(kk) Method 11 for concentration of hydrogen sulfide.

(ll) Method 101-Reference Method for Determination of Particulate and Gaseous Mercury Emissions from Stationary Sources (Air Streams), Method 102-Reference Method for Determination of Particulate and Gaseous Mercury Emissions from Stationary Sources (Hydrogen Streams), or Reference Method 105-Method for Determination of Mercury in Wastewater Treatment Sewage Sludges, set forth in 40 C.F.R. Part 61, Appendix B, whichever is applicable, for mercury emissions.

(mm) Method 103-Beryllium Screening Method or Method 104-Reference Method for Determination of Beryllium Emissions from Stationary Sources, set forth in 40 C.F.R. Part 61, Appendix B, whichever is applicable.

(3) Alternative Test Methods. In lieu of the test method described in paragraph (2), the Director may:

(aa) Specify or approve minor changes in the Reference Method set forth in paragraph (2) or the applicable regulation; or

(bb) Approve the use of an equivalent method; or

(cc) Approve the use of an alternative method the results of which he has determined to be adequate for indicating whether an affected facility is in compliance.

(4) Testing Conditions. Performance tests shall be conducted under such conditions as the Director shall specify. The owner or operator shall make available to the Director such records as may be necessary to determine the conditions of the performance tests. Operations during periods of startup, shutdown, and malfunction shall not constitute representative conditions of performance tests unless otherwise specified in an applicable regulation.

(5) Test Runs. Each performance test shall consist of three separate runs using the applicable test method. However, the Director reserves the right to require more than three runs under unusual circumstances. Each run shall be conducted for the time and under the conditions specified in the applicable standard. For the purpose of determining compliance with an applicable standard, the arithmetic mean of results of the three runs shall apply. In the event that a sample is accidentally lost or conditions occur in which one of the three runs must be discontinued because of forced shutdown, failure of an irreplaceable portion of the sample train, extreme meteorological conditions, or other circumstances beyond the owner or operator's control, compliance may, upon the Director's approval, be determined using the arithmetic mean of the results of the two other runs.

(6) Notification. The owner or operator shall notify the Director not less than 30 days prior to conducting any performance tests, unless a shorter time is accepted by the Director.

(7) Opacity.

(aa) Compliance with opacity standards in this part shall be determined by conducting observations in accordance with Reference Method 9. Opacity readings of portions of plumes which contain condensed, uncombined water vapor shall not be used for purposes of determining compliance with opacity standards. The results of continuous monitoring by transmissometer which indicate that the opacity at the time visual observations were made was not in excess of the standard are probative but not conclusive evidence of the actual opacity of an emission, provided that the owner or operator shall meet the burden of proving that the instrument used meets (at the time of the alleged violation) Performance Specification 1, has been properly maintained and (at the time of the alleged violation) calibrated, and that the resulting data have not been tampered with in any way.

(bb) The opacity standards set forth in a regulation shall apply at all times except during periods of startup, shutdown, malfunction, and as otherwise provided in the applicable standard.

(8) Agency Tests. Upon order of the Agency or the Director, the owner or operator of an emission facility shall allow the Agency, or any authorized employee or agent of the Agency, to enter upon the premises of the owner or operator for purposes of conducting performance tests. The owner or operator shall provide performance testing facilities which will enable the Agency or its agents or employees to conduct performance tests. Such performance testing facilities shall include:

(aa) Sampling ports adequate for test methods applicable to such facility.

(bb) Safe sampling platform(s).

(cc) Safe access to sampling platform(s).

(dd) Utilities for sampling and testing equipment.

(9) Additional Requirements. The owner or operator shall meet any other requirements imposed by the Agency or the Director in ordering the running of the performance tests.

(c) Reports

(1) Excess Emissions. Any owner or operator of an affected facility who is required to install a continuous monitoring system shall submit a written report of excess emissions for every calendar quarter.

(aa) The report shall be submitted to the Director of the Division of Air Quality of the Agency.

(bb) The report shall be submitted in accordance with the following requirements:

APC 21

(i) The report shall be postmarked by the 30th day following the end of each calendar quarter; and

(ii) The report shall contain the following information:

1. The magnitude of excess emissions, any conversion factor(s) used, and the date and time of commencement and completion of each time period of excess emissions.

2. Specific identification of each period of excess emissions that occurred during startups, shutdowns, and malfunctions of the affected facility, the nature and cause of any malfunction (if known), and the corrective action taken or preventative measures adopted.

3. The date and time identifying each period during which the continuous monitoring system was inoperative except for zero and span checks and the nature of the system repairs or adjustments.

APC 22

(b) Standards of Performance for Existing Portland Cement Plants

(1) No owner or operator of an existing portland cement plant shall cause or allow the discharge into the atmosphere any gases which:

(aa) Contain particulate matter in excess of the limits established by Minnesota Regulation APC 5, or

(bb) Exhibit greater than 20 percent opacity, except that a maximum of 40 percent opacity shall be permissible for not more than 4 minutes in any 30 minutes period and a maximum of 60 percent opacity shall be permissible for not more than 4 minutes in any 60 minute period.

(2) The requirements of this section are applicable to the kiln, the clinker cooler, the raw mill system, the raw mill dryer, raw material storage, the finish mill system, clinker storage, finished product storage, conveyor transfer points, and bagging and bulk loading and unloading systems.

(c) Standards of Performance for New Portland Cement Plants

(1) No owner or operator of a new portland cement plant shall cause or allow the discharge into the atmosphere from the kiln any gases which:

(aa) Contain particulate matter in excess of 0.15 kilogram per metric ton (0.30 pound per ton) of feed (dry basis) to the kiln; or

(bb) Exhibit greater than 20 percent opacity.

(2) No owner or operator of a new portland cement plant shall cause or allow the discharge into the atmosphere from the clinker cooler any gases which:

(aa) Contain particulate matter in excess of 0.050 kg per metric ton of feed (dry basis) to the kiln (0.10 lb per ton); or

(bb) Exhibit greater than 10 percent opacity.

(3) No owner or operator of a new portland cement plant shall cause or allow the discharge into the atmosphere from the raw mill system, the raw mill dryer, raw mill storage, the finish mill system, clinker storage, finished product storage, conveyor transfer points, or the bagging and bulk loading and unloading systems any gases which exhibit greater than 10 percent opacity.

(d) Monitoring of Operations. The owner or operator of any portland cement plant shall record the daily production rates and kiln feed rates.

(e) Performance Test Methods. Unless another method is approved by the Agency, any owner or operator required to submit performance tests for a portland cement plant shall utilize the following test methods:

(1) Method 5 for the concentration of particulate matter and the associated moisture content.

APC 23

(b) Standards of Performance for Existing Asphalt Concrete Plants. No owner or operator of an existing asphalt concrete plant shall cause to be discharged into the atmosphere from the asphalt concrete plant any gases which:

(1) Contain particulate matter in excess of the limits allowed by Minnesota Regulation APC 5, or

(2) Exhibit greater than 20 percent opacity, except that a maximum of 40 percent opacity shall be permissible for not more than 4 minutes in any 30 minute period and a maximum of 60 percent opacity shall be permissible for not more than 4 minutes in any 60 minute period.

(c) Standards of Performance for New Asphalt Concrete Plants. No owner or operator of a new asphalt concrete plant shall cause to be discharged into the atmosphere from the asphalt concrete plant any gases which:

(1) Contain particulate matter in excess of 90 mg/dscm (0.04 gr/dscf); or

(2) Exhibit 20 percent opacity or greater.

(d) Test Methods. Unless another method is approved by the Agency, any owner or operator required to submit performance tests for an asphalt concrete plant shall utilize the following test methods:

(1) Method 5 for the concentration of particulate matter and the associated moisture content.

(2) Method 1 for sample and velocity traverses.

(3) Method 2 for velocity and volumetric flow rate.

(4) Method 3 for gas analysis.

(e) Performance Test Procedures. For Method 5, the sampling time for each run shall be at least 60 minutes and the sampling rate shall be at least 0.9 dscm/hr (0.53 dscf/min) except that shorter sampling times, when necessitated by process variables or other factors, may be approved by the Agency.

[March 12, 1976]

APC 24

(b) Standards of Performance for Existing Affected Facilities at Petroleum Refineries

(1) Fluid Catalytic Cracking Unit Catalyst Regenerator and Incinerator-Waste Heat Boiler. No owner or operator of an existing fluid catalytic cracking unit catalyst regenerator or its incinerator-waste heat boiler at a petroleum refinery shall cause to be discharged into the atmosphere from such regenerator or its incinerator-waste heat boiler any gases which:

(aa) Contain particulate matter in excess of 10.0 lb/1000 lb (10.0 kg/1000 kg) of coke burn-off in the catalyst regenerator, or

(bb) Exhibit greater than 30 percent opacity, except that 30 percent opacity may be exceeded for 3 minutes in any 60 minute period and except that this opacity standard shall not apply during periods of soot blowing.

(2) Fuel Gas Combustion Device and Indirect Heating Equipment. No owner or operator of existing fuel gas combustion devices and indirect heating equipment at a petroleum refinery shall cause to be discharged into the atmosphere from such devices and equipment any gases which contain sulfur dioxide in excess of 1.75 pounds per million BTU (3.15 grams per million cal) heat input. The total emissions of sulfur dioxide from all existing fuel gas combustion devices and all indirect heating equipment shall be divided by the total heat input of all such devices and equipment to determine compliance with this section; provided that no owner or operator shall cause to be discharged from any one fuel gas combustion device or any one unit of indirect heating equipment any gases which contain sulfur dioxide in excess of 3.0 pounds per million BTU (5.4 grams per million cal) heat input.

(3) Indirect Heating Equipment. No owner or operator of existing indirect heating equipment at a petroleum refinery shall cause to be discharged into the atmosphere from such equipment any gases which:

(aa) Contain particulate matter in excess of 0.4 pounds per million BTU (0.72 grams per million cal) heat input; or

(bb) Exhibit greater than 20% opacity, except that a maximum of 60% opacity shall be permissible for four minutes in any 60 minute period and that a maximum of 40% opacity shall be permissible for four additional minutes in any 60 minute period.

(c) Standards of Performance for New Affected Facilities at Petroleum Refineries

(1) Fluid Catalytic Cracking Unit Catalyst Regenerator and Incinerator-Waste Heat Boiler

(aa) No owner or operator of a new fluid catalytic cracking unit catalyst regenerator or its incinerator-waste heat boiler at a petroleum refinery shall cause to be discharged into the atmosphere from such regenerator or incinerator-waste heat boiler any gases which:

(i) Contain particulate matter in excess of 1.0 lb/1000 lb (1.0 kg/1000 kg) of coke burn-off in the catalyst regenerator, or

(ii) Exhibit greater than 30 percent opacity, except that 30 percent opacity may be exceeded for 3 minutes in any 60 minute period.

(2) Fuel Gas Combustion Device. No owner or operator of a new fuel gas combustion device at a petroleum refinery shall burn in any such device any fuel gas which contains H_2S in excess of 0.10 gr/dscf, (230 mg/dscm) except as provided herein. The owner or operator may elect to treat the gases resulting from the combustion of fuel gas in a manner which limits the release of SO_2 to the atmosphere if it is shown to the satisfaction of the Director that this prevents SO_2 emissions as effectively as compliance with the H_2S restriction set forth above.

(3) Indirect Heating Equipment

(aa) No owner or operator of new indirect heating equipment at a petroleum refinery shall cause to be discharged into the atmosphere from such equipment any gases which contain sulfur dioxide in excess of 1.75 pounds per million BTU (3.15 grams per million cal) heat input. The total emissions of sulfur dioxide from all existing and new fuel gas combustion devices and indirect heating equipment shall be divided by the total heat input of all such devices and equipment to determine compliance with this section; provided that no owner or operator shall cause to be discharged from any one unit of new indirect heating equipment any gases which contain sulfur dioxide in excess of 3.0 pounds per million BTU (5.4 grams per million cal) heat input.

(bb) No owner or operator of new indirect heating equipment at a petroleum refinery shall cause to be discharged into the atmosphere from such equipment any gases which:

(i) Contain particulate matter in excess of 0.4 pounds per million BTU (0.72 grams per million cal) heat input; or

(ii) Exhibit greater than 20% opacity, except that a maximum of 60% opacity shall be permissible for four minutes in any 60 minute period and that a maximum of 40% opacity shall be permissible for four additional minutes in any 60 minute period.

(cc) The owner or operator of a new steam generating unit of more than 250 million BTU per hour (63 million cal per hour) heat input at a petroleum refinery shall comply with the following requirements:

(i) No gases shall be discharged from the steam generating unit which contain particulate matter in excess of 0.1 pounds per million BTU (0.18 grams per million cal) heat input.

(ii) No gases shall be discharged which exhibit greater than 20% opacity, except that a maximum of 40% opacity shall be permissible for two minutes in any hour.

(iii) No gases shall be discharged which contain sulfur dioxide in excess of 0.80 pounds per million BTU (1.4 grams per million cal) heat input if a liquid fossil fuel is burned and 1.2 pounds per million BTU (2.2 grams per million cal) heat input if a solid fossil fuel is burned. When different fossil fuels are burned simultaneously in any combination, the applicable standard shall be determined by proration using the following formula:

$$x = \frac{y(0.8) + z(1.2)}{y + z} \qquad \text{(English units)}$$

where:

x is the maximum allowable emissions of sulfur dioxide gases in lbs. per million BTU, and

y is the percentage of total heat input derived from liquid fossil fuel, and

z is the percentage of total heat input derived from solid fossil fuel, and

compliance shall be based on the total heat input from all fossil fuel burned including gaseous fuels.

(d) Exemptions

(1) The combustion of process upset gas in a flare, or the combustion in a flare of process gas or fuel gas which is released to the flare as a result of relief valve leakage, is exempt from the standards of performance set forth in this regulation.

(2) The standards of performance promulgated in Minnesota Regulations APC 4 for indirect heating equipment shall not apply to indirect heating equipment at a petroleum refinery. Only those standards of performance for indirect heating equipment set forth in this regulation shall apply to such equipment.

(e) Emission Monitoring

(1) Fluid Catalytic Cracking Unit Catalyst Regenerators.

(aa) Opacity

(i) The owner or operator of any new fluid catalytic unit catalyst regenerator and the owner or operator of an existing fluid catalytic cracking unit catalyst regenerator for fluid bed catalyst cracking units of greater than 20,000 barrels per day fresh feed capacity shall install, calibrate, maintain, and operate a continuous monitoring system for the measurement of opacity of emissions discharged into the atmosphere from the regenerator.

(ii) The continuous monitoring system shall be spanned at 60, 70, or 80 percent opacity.

(bb) Coke Burn-off. The average coke burn-off rate (thousands of pounds per hour or thousands of kilograms per hour) and hours of operation of any fluid catalytic cracking unit catalyst regenerator shall be recorded daily.

(2) Fuel Gas Combustion Devices.

(aa) Sulfur Dioxide

(i) The owner or operator of a new fuel gas combustion device at a petroleum refinery shall install, calibrate, maintain, and operate a continuous monitoring system for the measurement of sulfur dioxide in the gases discharged into the atmosphere.

(ii) The pollutant gas used to prepare calibration gas mixtures and for calibration checks shall be sulfur dioxide (SO_2).

(iii) The span shall be set at 100 ppm.

(iv) Reference Method 6 shall be used for conducting monitoring system performance specifications.

APC 24

(v) For the purpose of reports under Minnesota Regulations APC 21(c)(1)(bb)(ii), periods of excess emissions that shall be reported are defined as any six-hour period during which the average emissions (arithmetic average of six continuous one-hour periods) of sulfur dioxide as measured by a continuous monitoring system exceed the applicable standards of performance in this regulation.

(bb) Hydrogen Sulfide. The owner or operator of a new fuel gas combustion device at a petroleum refinery may elect to install a continuous monitoring system for the measurement of hydrogen sulfide in the fuel gas instead of the sulfur dioxide monitor described in this subsection. The owner or operator shall notify the Director in writing of such election. The owner or operator who elects to install the hydrogen sulfide monitor shall not be required to do so until monitoring requirements for such a system are promulgated; provided, however, the Director may require the installation of a sulfur dioxide monitor under the provisions of Minnesota Regulations APC 21(a)(1).

APC 25

(b) Standards of Performance for Secondary Lead Smelters

(1) No owner or operator of a secondary lead smelter shall cause to be discharged into the atmosphere from a blast (cupola) furnace or reverberatory furnace any gases which:

(aa) Contain particulate matter in excess of 50 mg/dscm (0.022 gr/dscf).

(bb) Exhibit 20 percent opacity or greater.

(2) No owner or operator of a secondary lead smelter shall cause to be discharged into the atmosphere from any pot furnace of more than 250 kg (550 lb) any gases which exhibit 10 percent opacity or greater.

(c) Performance Test Methods. Unless another method is approved by the Agency, any owner or operator required to submit performance tests for a secondary lead smelter shall utilize the following test methods:

(1) Method 5 for the concentration of particulate matter and the associated moisture content.

(2) Method 1 for sample and velocity traverses,

(3) Method 2 for velocity and volumetric flow rate, and

(4) Method 3 for gas analysis.

(d) Performance Test Procedures. In testing for the concentration of particulate matter and the associated moisture content, the minimum sampling time for each run shall be at least 60 minutes and the sampling rate shall be at least 0.9 dscm/hr (0.53 dscf/min) except that shorter sampling times, when necessitated by process variables or other factors, may be approved by the Agency. Particulate sampling shall be conducted during representative periods of furnace operation, including charging and tapping.

[May 7, 1976]

APC 26

(b) Standards of Performance for Secondary Brass and Bronze Ingot Production Plants

(1) No owner or operator of a secondary brass or bronze ingot production plant shall cause to be discharged into the atmosphere from a reverberatory furnace any gases which:

(aa) Contain particulate matter in excess of 50 mg/dscm (0.022 gr/dscf).

(bb) Exhibit 20 percent opacity or greater.

(2) No owner or operator of a secondary brass or bronze ingot production plant shall cause to be discharged into the atmosphere from any electric furnace of 1,000 kg (2,205 lbs) or greater production capacity any gases which exhibit 10 percent opacity or greater.

(3) No owner or operator of a secondary brass or bronze ingot production plant shall cause to be discharged into the atmosphere from any blast (cupola) furnace of 250 kg/hr (550 lb/hr) or greater production capacity any gases which exhibit 10 percent opacity or greater.

(4) No owner or operator of a secondary brass or bronze ingot production plant shall cause to be discharged into the atmosphere from any electric furnace of less than 1,000 kg (2,205 lbs) production capacity or any blast (cupola) furnace of less than 250 kg/hr (550 lb/hr) production capacity any gases which exceed the limits of APC-5 for particulate emissions, and exhibit 20 percent opacity or greater.

APC 28

(b) Standards of Performance for Existing Sewage Sludge Incinerators

(1) No owner or operator of an existing sewage sludge incinerator shall cause to be discharged into the atmosphere from the sewage sludge incinerator any gases which:

(aa) Contain particulate matter in excess of 0.3 gr/dscf corrected to 12 percent CO_2 if the incinerator has a burning capacity of less than 200 pounds per hour.

(bb) Contain particulate matter in excess of 0.2 gr/dscf corrected to 12 percent CO_2 if the incinerator has a burning capacity of 200 to 2000 pounds per hour.

(cc) Contain particulate matter in excess of 0.1 gr/dsf corrected to 12 percent CO_2 if the incinerator has a burning capacity of greater than 2000 pounds per hour.

(2) No owner or operator of an existing sewage sludge incinerator shall cause to be discharged into the atmosphere from the incinerator any gases which exhibit greater than 20 percent opacity, except that a maximum of 40 percent opacity shall be permissible for four minutes in any 60 minute period.

(c) Standards of Performance for New Sewage Sludge Incinerators

(1) No owner or operator of a new sewage sludge incinerator shall cause to be discharged into the atmosphere from the incinerator any gases which:

(aa) Contain particulate matter in excess of 0.65 g/kg dry sludge input (1.30 lb/ton dry sludge input), or

(bb) Exhibit 20 percent opacity or greater.

APC 28

(e) Performance Test Methods. Unless another method is approved by the Agency, any owner or operator required to submit performance tests for a sewage sludge incinerator shall utilize the following methods:

(1) Method 5 for concentration of particulate matter and associated moisture content,

(2) Method 1 for sample and velocity traverses,

(3) Method 2 for volumetric flow rate, and

(4) Method 3 for gas analysis.

MISSISSIPPI

SECTION 4

Gas streams containing hydrogen sulfide in excess of one grain per 100 standard cubic feet shall be incinerated at temperatures of not less than 1600° F for a period of not less than 0.5 seconds, or processed in such manner as to be equally or more effective for removing hydrogen sulfide.

Sulfur dioxide concentrations in the gas streams resulting from such incineration or processing shall not exceed 2000 ppm (volume). This sulfur dioxide limitation may be met by reduction of the hydrogen sulfide concentration prior to incineration or processing or by subsequent processing to remove the sulfur dioxide generated in excess of this emission limitation.

Sulfur dioxide emissions in excess of 2000 ppm from such incineration or processing will be permitted if it can be demonstrated to the Mississippi Air and Water Pollution Control Commission that such emissions will not cause the Air Quality Standard to be exceeded. The conduct of said demonstration must be approved by the Comission or its representatives and must include but may not be limited to, two or more sulfur dioxide monitors of an approved type installed at approved locations. The Commission's representatives shall be afforded the opportunity to calibrate and check the performance of the monitors without prior notification of the owner. Testing to determine the productive capacity of new fields shall be exempted from the emission limitation provisions of this paragraph of the regulation providing such testing has been previously negotiated and approved by the Mississippi Air and Water Control Commission.

This regulation shall not apply to sulfur recovery plants.

(c) No person shall cause or permit acid mist emissions from sulfuric acid manufacturing plants to exceed 0.5 pounds/ton of acid produced. Sulfur trioxide emissions from sulfuric acid manufacture are not to exceed 0.2 pounds/ton of acid produced.

(d) No person shall cause or permit emissions of sulfur oxides, calculated as sulfur dioxide, from a sulfur recovery plant to exceed 0.12 pounds per pound of sulfur processed.

(e) No person shall cause or permit emissions of sulfur oxides, calculated as sulfur dioxide, from primary nonferrous smelters to exceed that set forth according to the following equations.

Copper smelters: $Y = 0.2X$
Zinc smelters : $Y = 0.564X^{0.85}$
Lead smelters : $Y = 0.98X^{0.77}$

Where X is the total sulfur fed to the smelter in pounds/hour and Y is the allowable sulfur emissions in pounds/hour.

(f) Kraft Pulping Mills. All mills existing prior to adoption of this regulation and not modified subsequent thereto shall comply with the following emission limits:

(1) Recovery Boilers. The emission of TRS from all recovery furnace stacks shall not exceed two pounds of sulfur per ton of equivalent air-dried kraft pulp, or from each recovery furnace stack seventy ppm, expressed as hydrogen sulfide on a dry gas basis, whichever is the most restrictive.

(2) Non-condensibles. Non-condensibles from digester systems, multiple-effect evaporators, and similar Kraft mill gas streams, shall be treated to reduce the emission of TRS equal to the reduction achieved by thermal oxidation in a kiln followed by alkaline scrubbing.

MISSISSIPPI

SECTION 3. SPECIFIC CRITERIA FOR SOURCES OF PARTICULATE MATTER

1. Smoke

(a) No person shall cause, permit, or allow the emission of smoke from a point source into the open air from any manufacturing, industrial, or commercial process or from any waste disposal process of which the shade is darker than number two (2) on the Ringelmann Smoke Chart.

(b) Start-up operations may produce darker emissions for up to fifteen (15) minutes per start-up in any one hour and not to exceed three (3) start-ups per stack in any twenty-four (24) hour day.

(d) Emissions resulting from soot blowing operations shall be permitted provided such emissions do not exceed a shade of appearance of a Ringelmann No. 3 on the Ringelmann Smoke Chart, and provided further that the aggregate duration of such emissions during any twenty-four (24) hour period does not exceed ten (10) minutes per billion BTU gross heating value of fuel in any one hour.

2. Equivalent Opacity. No person shall cause, allow, or permit the discharge into the ambient air from any point source or emission whatsoever, any air contaminant of such opacity as to obscure an observer's view to a degree in excess of 40% opacity, equivalent to that provided in Section 3 (1a). This shall not apply to vision obscuration caused by uncombined water droplets.

SECTION 4. SPECIFIC CRITERIA FOR SOURCES OF SULFUR COMPOUNDS

1. Sulfur Dioxide Emissions from Fuel Burning

(a) The maximum discharge of sulfur oxides from any fuel burning installation in which the fuel is burned primarily to produce heat or power by indirect heat transfer shall not exceed 4.8 pounds (measured as sulfur dioxide) per million BTU heat input.

(c) The maximum discharge of sulfur dioxide from any modified fuel burning unit whose generation capacity is less than 250 million BTU per hour and in which the fuel is burned primarily to produce heat or power by indirect heat transfer shall not exceed 2.4 pounds (measured as sulfur dioxide) per million BTU heat input. "Modification" shall mean any physical change in an Air Contaminant Source which increases the amount of any air pollutant (to which a standard applies) emitted by such source or which results in the emission of any air pollutant(to which a standard applies) not previously emitted.

2. Sulfur Dioxides Emissions From Processes

(a) Except as otherwise provided herein, no person shall cause or permit the emission of gas containing sulfur oxides (measured as sulfur dioxide) in excess of 2,000 ppm (volume) from any existing process equipment, or in excess of 500 ppm (volume) from any new process equipment. The 500 ppm (volume) requirement shall apply for new equipment unless otherwise provided by the Commission.

(b) Except as otherwise provided in paragraph 2(f)-1 no person shall cause or permit the emission of any gas stream which contains hydrogen sulfide in excess of one grain per 100 standard cubic feet.

MISSISSIPPI

SECTION 6. NEW SOURCES

The provisions of this section apply to the owner or operator of any source listed herein, the construction or modification of which is commenced after the date of adoption of specific emission limitations applicable to such source.

1. Kraft Pulping Mills. All sources shall minimize gaseous and particulate emissions by use of modern equipment, devices, maintenance, and operating practices in accordance with best current technology. In no case shall emissions exceed the limits set forth in any applicable Federal Standard of Performance for New Stationary Sources.

MISSOURI

10 CSR 10-2.060 Restriction of Emission of Visible Air Contaminants

PURPOSE: This regulation specifies the maximum allowable shade or opacity of visible air contaminant emissions, unless exempt or regulated by 10 CSR 10-2.090 or 2.190.

(1) Restrictions Applicable to All Installations

(A) No person may discharge into the ambient air from any source of emission whatsoever any air contaminant: 1. of a shade or density equal to or darker than designated as No. 1 on the Ringelmann Chart; or 2. of such opacity as to obscure an observer's view to a degree equal to or greater than does smoke designated as No. 1 on the Ringelmann Chart.

(2) Exceptions

(A) A person may discharge into the ambient air from any single source of emission for a period or periods aggregating not more than six minutes in any sixty minutes air contaminants: 1. of a shade or density not equal to nor darker than No. 3 on the Ringelmann Chart; or 2. of such opacity as to obscure an observer's view to a degree not equal to nor greater than does smoke designated as No. 3 on the Ringelmann Chart.

(3) Method of Measurement

(A) The Ringelmann Chart shall be the standard in grading the shade or opacity of visible air contaminant emissions. The executive secretary may with the consent of the source operator employ any other means of measurement which give comparable results or results of greater accuracy.

10 CSR 10-3.040 Incinerators

PURPOSE: This regulation establishes acceptable design and performance criteria for incineration devices except where 10 CSR 10-3.140 would be applied.

(1) Application

(A) This regulation shall apply throughout the state of Missouri except in the City of St. Louis, and St. Charles, St. Louis, Jefferson, Franklin, Clay, Cass, Buchanan, Ray, Jackson, Platte, and Greene counties.

(B) No person may cause or permit the emission from any incinerator any air contaminant of a shade or density equal to or darker than that designated by the number on the Ringelmann Chart specified herein, or of such opacity as to obscure an observer's view to a degree equal to or greater than an emission designated by that number on the Ringelmann Chart as specified herein:

1. New incinerators: Ringelmann Chart Number 1.

2. New tepee burners: Ringelmann Chart Number 2 until Jan. 1, 1973 and Ringelmann Chart No. 1 thereafter.

3. All other incinerators: Ringelmann Chart Number 2, provided that for purposes of starting a fire or for charging any existing incinerator, except for tepee burners, a person may discharge for a period or periods aggregating not more than six (6) minutes in any sixty (60) consecutive minutes, air contaminants of a shade or density darker than No. 2 on the Ringelmann Chart, or of such opacity as to obscure an observer's view greater than an emission designated as No. 2 on the Ringelmann Chart.

4. All tepee burners for purposes of starting a fire may discharge for a period, not exceeding 30 minutes, air contaminants of a shade or density darker than No. 2 on the Ringelmann Chart, or of such opacity as to obscure an observer's view greater than an emission designated as No. 2 on the Ringelmann Chart.

10 CSR 10-3.080 Restriction of Emission of Visible Air Contaminants

PURPOSE: This regulation specifies the maximum allowable shade or opacity of visible air contaminant emissions, unless exempt or regulated by 10 CSR 10-3.040 or 3.140, and requires the use of opacity monitoring devices on certain air contaminant sources.

(1) Application

(A) This regulation shall apply throughout the state of Missouri except in the City of St. Louis, and St. Charles, St. Louis, Jefferson, Franklin, Clay, Cass, Buchanan, Ray, Jackson, Platte, and Greene counties.

(3) Restrictions Applicable to Existing Installations

(A) No person may discharge into the ambient air from any single existing source of emission whatsoever any air contaminant

1. of a shade or density equal to or darker than

that designated as No. 2 on the Ringelmann Chart, or

2. of such opacity as to obscure an observer's view to a degree equal to or greater than does smoke designated as No. 2 on the Ringelmann Chart.

(4) Restrictions Applicable to New Installations

(A) No person may discharge into the ambient air from any single new source of emission whatsoever, any air contaminant

1. of a shade or density equal to or darker than that designated as No. 1 on the Ringelmann Chart, or

2. of such opacity as to obscure an observer's view to a degree equal to or greater than does smoke designated as No. 1 on the Ringelmann Chart.

(5) Exceptions

(A) A person may discharge into the ambient air from any single source of emission for a period or periods aggregating not more than six minutes in any sixty minutes air contaminants

1. of a shade or density not equal to nor darker than No. 3 on the Ringelmann Chart, or

2. of such opacity as to obscure an observer's view to a degree not equal to nor greater than does smoke designated as No. 3 on the Ringelmann Chart.

(6) Method of Measurement

(A) The Ringelmann Chart shall be the standard in grading the shade or opacity of visible air contaminant emissions. The executive secretary may with the consent of the source operator employ any other means of measurement which gives comparable results or results of greater accuracy.

(B) The installation of opacity monitoring devices shall be required on fluid bed catalytic cracking unit catalyst regenerators, coal-fired steam generating units with greater than 250 million BTU/hour heat input, and portland cement calcining kiln operations.

(C) Minimum specifications

1. Performance specifications. Continuous monitoring systems for monitoring opacity shall comply with performance specification 1 as set forth in 40 CFR Part 60, Appendix B, "Performance Specification 1".

2. Cycling time. Cycling times include the total time a monitoring system requires to sample, analyze, and record an emission measurement. Continuous monitoring systems for measuring opacity shall complete a minimum of one cycle of operation (sampling, analyzing, and data recording) for each successive ten second period.

3. Monitor location. All continuous monitoring systems or monitoring devices shall be installed such that the measurements obtained are representative measurements of emissions occurring within the discharged opacity profile.

4. Combined effluents. When the effluents from two or more affected facilities of similar design and operating characteristics are combined before being released to the atmosphere, opacity monitoring systems may be installed on the combined effluent.

5. Zero and drift. The owners or operators of all continuous monitoring systems installed in accordance with the requirements of this rule shall record the zero and drift at least once daily unless the manufacturer has recommended adjustments at shorter intervals, at which case such recommendations shall be followed, and shall adjust the zero and span whenever the twenty-four hour zero drift or twenty-four hour calibration drift limits in 40 CFR Part 60, Appendix B, "Performance Specification 1" are exceeded or whenever the twenty-four hour zero drift or twenty-four hour calibration drift exceed 10% of the emission standard.

6. Span. Instrument span shall be approximately 200% of the expected instrument data display output corresponding to the emission standard for the source.

(D) Minimum Data Requirements

1. Written reports required. Owners or operators of facilities required to install continuous monitoring systems shall submit a written report of excess emissions for each calendar quarter and the nature and cause of the excess emissions, if known, to the staff director. All quarterly reports shall be postmarked by the 30th day following the end of each calendar quarter.

2. Data summary. The data summary shall consist of the magnitude in actual percent opacity of all six minute averages of opacity greater than the opacity emission limitation. Average of values may be obtained by integration over the averaging period or by arithmetically averaging a minimum of twenty-four equally spaced instantaneous opacity measurements per six minute period. A one hour period means any sixty minute period commencing on the hour and a six minute period means any one of ten equal parts of a one hour period.

3. Inoperative periods. The date and time identifying each period during which the continuous monitoring system was inoperative (except for zero and span checks) and the nature of system repairs or adjustments shall be reported.

4. No excess emissions. When no excess emissions have occurred during the reporting period and the continuous monitoring system has not been inoperative, repaired, or adjusted, such information shall be included in the report.

5. Files to be maintained. Owners or operators of affected facilities shall maintain a file of all information reported in the quarterly summaries, and all other data collected either by the continuous monitoring system or as necessary to convert monitoring data to the units of the applicable standard, for a minimum of two years from the date of collection of such data or submission of such summaries.

(E) Special Considerations

1. Alternatives. Alternative monitoring requirements, system locations, and procedures for performing calibration checks which do not meet the requirements of this rule, but adequately demonstrate a definite and consistent relationship with the intent of this rule, may be approved by the staff director.

2. Exceptions

A. Coal fired steam generating units that have an annual boiler capacity factor of 30 percent or less as currently defined by the Federal Power Commission shall be exempt from these monitoring requirements.

B. Coal fired boilers and portland cement calcining kilns scheduled for retirement prior to January 1, 1981, shall be exempt from these monitoring requirements subject to receipt and approval of an affidavit by the staff director.

C. Coal fired boilers which utilize flue gas desulfurization equipment shall be exempt from these monitoring requirements.

D. Portland cement calcining kilns whose particulate emissions are controlled with bag—houses which emit from multiple stacks or vents shall be exempt from these opacity monitoring requirements.

(F) Compliance

1. Owners or operators of affected facilities shall submit a plan for meeting the requirements of this rule to the staff director within 60 days of its effective date.

2. Notwithstanding compliance with any other provision of this rule, no owner or operator of a facility affected by this rule will be deemed to be in compliance until the compliance plan receives the written approval of the staff director.

3. Effective dates of compliance. Facilities affected by this rule shall comply within twelve months of its effective date.

(7) Time Schedule for Compliance

(A) Except as otherwise specified, compliance with the provisions of this regulation shall be according to the following time schedule:

1. All new installations shall comply when operation begins.

2. All existing installations not in compliance as of the effective date of this regulation shall be in compliance within six months of the effective date unless the owner or person responsible for the operation of the installation shall have submitted to the executive secretary in a form and manner satisfactory to him, a program and schedule for achieving compliance, such program and schedule to contain a date on or before which full compliance will be attained, and such other information as the executive secretary may require. If approved by the executive secretary, such date will be the date on which the person shall comply.

3. The executive secretary may require persons submitting such program to submit periodic subsequent reports on progress in achieving compliance.

Auth: section 203.050 RSMo (1969). Original rule filed March 24, 1971, effective April 3, 1971. Amended: Filed Jan. 31, 1972, effective Feb. 10, 1972. Amended: Filed Jan. 14, 1977, effective July 11, 1977.

10 CSR 10-3.100 Restriction of Emission of Sulfur Compounds

PURPOSE: This regulation establishes the maximum allowable concentration of sulfur compounds in source emissions and in the ambient air, except where 10 CSR 10-3.140 would be applied.

(1) Application

(A) This regulation shall apply throughout the state of Missouri except in the City of St. Louis, and St. Charles, St. Louis, Jefferson, Franklin, Clay, Cass, Buchanan, Ray, Jackson, Platte and Greene counties.

(C) The method of measuring sulfur trioxide and sulfuric acid or any combination thereof in stack gases shall be:

1. Particulates (sulfuric acid—acid mists), "Atmospheric Emissions from Sulfuric Acid Manufacturing Processes", Ref. Public Health Service Publication 999-AP-13 (1965), Appendix B, Page 61-6 (Modified Monsanto Co. Method). Secondary reference for industrial emission sampling and analysis for gases (sulfur trioxide and sulfur dioxide), "Determination of Sulfur Dioxide and Sulfur Trioxide in Stack Gases", Emeryville Method Ser. 4S16/59a. Anal. Dept. Shell Development Co., Emeryville, California (1959).

(E) The method of measuring sulfur dioxide in stack gases shall be:

1. Gaseous (sulfur trioxide—sulfur dioxide), "Atmospheric Emissions from Sulfuric Acid Manufacturing Processes", Ref. Public Health Service Publication 999-AP-13 (1965), Appendix B, Page 85-7 (Shell Development Co. Method). Secondary reference for industrial emission sampling and analysis for gases (sulfur trioxide and sulfur dioxide), "Determination of Sulfur Dioxide and Sulfur Trioxide in Stack Gases", Emeryville Method Ser. 4S16/59a. Anal. Dept. Shell Development Co., Emeryville, California (1959).

(4) Concentration of Sulfur Compounds in Emissions Restricted

(A) No person shall cause or permit the emission into the atmosphere from any existing source specified in subsection (3) (A) of this regulation, gases containing more than 2,000 parts per million by volume of sulfur dioxide or 500 parts per million by volume of sulfur dioxide from any new source.

(B) No person shall cause or permit the emission

(5) Emission of Sulfur Compounds in Certain Amounts and Manner Restricted

(A) No person may cause or permit the emission of sulfur dioxide from any source in excess of one thousand (1,000) pounds per hour except when such emissions do not cause or contribute to concentrations and frequencies exceeding those specified in the following table in the ambient air at any occupied place beyond the premises on which the source is located: concentration, .25 ppm by volume or more; averaging time, 1 hour; maximum allowable frequency, once in any 4 days at any sampling site. Concentration, .07 ppm by volume or more; averaging time, 24 hours; maximum allowable frequency, once in any 90 days at any sampling site.

10 CSR 10-4.060 Restrictions of Emission of Visible Air Contaminants

PURPOSE: This regulation specifies the maximum allowable shade or opacity of visible air contaminant emissions, unless exempt or regulated by 10 CSR 10-4.080 or 4.180.

(1) Restrictions Applicable to Existing Installations

(A) No person may discharge into the ambient air from any single existing source of emission whatsoever any air contaminant:

1. of a shade or density equal to or darker than that designated as No. 2 on the Ringelmann Chart, or

2. of such opacity as to obscure an observer's view to a degree equal to or greater than does smoke designated as No. 2 on the Ringelmann Chart.

(2) Restrictions Applicable to New Installations

(A) No person may discharge into the ambient air from any single new source of emission whatsoever, any air contaminant:

1. of a shade or density equal to or darker than that designated as No. 1 on the Ringelmann Chart or

2. of such opacity as to obscure an observer's view to a degree equal to or greater than does smoke designated as No. 1 on the Ringelmann Chart.

(3) Exceptions

(A) A person may discharge into the ambient air from any single source of emission for a period or periods aggregating not more than six minutes in any sixty minutes air contaminants:

1. of a shade or density not equal to nor darker than No. 3 on the Ringelmann Chart, or

2. of such opacity as to obscure an observer's view to a degree not equal to nor greater than does smoke designated as No. 3 on the Ringelmann Chart.

(4) Method of Measurement

(A) The Ringelmann Chart shall be the standard in grading the shade or opacity of visible air contaminant emissions. The executive secretary may with the consent of the source operator employ any other means of measurement which give comparable results or results of greater accuracy.

Auth: section 203.050 RSMo (1969). Original rule filed Dec. 5, 1969, effective Dec. 15, 1969.

10 CSR 10-4.150 Restriction of Emission of Sulfur Compounds

PURPOSE: This regulation establishes the maximum allowable concentration of sulfur compounds in source emissions and in the ambient air, except where 10 CSR 10-4.180 would be applied.

(C) The method of measuring sulfur trioxide and sulfuric acid or any combination thereof in stack gases shall be:

1. Particulates (sulfuric acid-acid mists) "Atmospheric Emissions from Sulfuric Acid Manufacturing Processes", Ref. Public Health Service Publication 999-AP-13 (1965), Appendix B, Page 61-6 (Modified Monsanto Co. Method). Secondary reference for industrial emission sampling and analysis for particulates (sulfuric acid-acid mists) W.F. Patton, J.A. Brink, "New Equipment and Techniques for Sampling Chemical Process Cases". J. Air Pollution Control Association, 13, 162-66 (April 1963).

(E) The method of measuring sulfur dioxide in stack gases shall be:

1. Gaseous (sulfur dioxide) colorimetric, Ref. "Selected Methods for the Measurement of Air Pollutants", Public Health Service Publication No. 999-AP-11 (May 1965), "Determination of Sulfur Dioxide: West-Gaeke Method", Page A1-5.

(3) Concentration of Sulfur Compounds in Emissions Restricted

(A) No person shall cause or permit the emission into the atmosphere from any existing source specified in subsection (2) (A) of this regulation, gases containing more than 2,000 parts per million by volume of sulfur dioxide or 500 parts per million by volume of sulfur dioxide from any new source.

(B) No person shall cause or permit the emission into the atmosphere from any source specified in subsection (2) (A) of this regulation, gases containing more than 70 milligrams per cubic meter of sulfuric acid or sulfur trioxide or any combination thereof or 35 milligrams per cubic meter of sulfuric acid, sulfur trioxide or any combination thereof from any new source (expressed as sulfuric acid).

10 CSR 10-4.150

(4) Emission of Sulfur Compounds in Certain Amounts and Manner Restricted

(A) No person may cause or permit the emission of sulfur dioxide from any source in excess of one thousand (1,000) pounds per hour except when such emissions do not cause or contribute to concentrations and frequencies exceeding those specified in the following table in the ambient air at any occupied place beyond the premises on which the source is located: Concentration, .25 ppm by volume or more; averaging time, 1 hour; maximum allowable frequency, once in any 4 days at any sampling site. Concentration .07 ppm by volume or more; averaging time, 24 hours; maximum allowable frequency, once in any 90 days at any sampling site.

10 CSR 10-5.090 Restriction of Emission of Visible Air Contaminants

PURPOSE: This regulation specifies the maximum allowable shade or opacity of visible air contaminant emissions, unless exempt or regulated by 10 CSR 10-5.280, and requires the use of opacity monitoring devices on certain air contaminant sources.

(1) Restrictions Applicable to All Installations

(A) No person shall discharge into the atmosphere from any single source of emission whatsoever any air contaminant of a shade or density equal to or darker than that designated as No. 1 on the Ringelmann Chart, or 20 percent opacity.

(B) This section (1) shall not apply to existing sources, other than incinerators, which emit less than 25 pounds per hour of particulate.

(2) Restrictions Applicable to Existing Installations, other than Incinerators, which emit less than 25 pounds per hour of particulate.

(A) No person exempted from the provisions of section (1) above shall discharge into the atmosphere from any single source of emission whatsoever any air contaminant of a shade or density equal to or darker than that designated as No. 2 on the Ringelmann Chart, or 40 percent opacity.

(B) This section (2) shall not apply to incinerators.

(3) Exceptions

(A) A person subject to section (1) above may discharge into the atmosphere from any single source of emission for a period or periods aggregating not more than six minutes in any sixty minutes air contaminants of a shade or density not darker than No. 2 on the Ringelmann Chart, or 40 percent opacity.

(4) Method of Measurement

(A) The Ringelmann Chart published and described in the U.S. Bureau of Mines Information Circular 7718 or the U.S. Public Health Service Smoke Inspection Guide as described in the Federal Register, Title 42, Chapter 1, Subchapter F, Part 75, shall be used in grading the shade or opacity of visible air contaminant emissions. The director of the Department of Natural Resources may specify other means of measurement which give comparable results or results of greater accuracy. The two publications described in this subsection are hereby made a part of this regulation by reference.

(B) The installation of opacity monitoring devices shall be required on fluid bed catalytic cracking unit catalyst regenerators, coal-fired steam generating units with greater than 250 million BTU/hour heat input, and portland cement calcining kiln operations.

(C) Minimum Specifications

1. Performance specifications. Continuous monitoring systems for monitoring opacity shall comply with performance specification 1 as set forth in 40 CFR Part 60, Appendix B, "Performance Specification 1".

2. Cycling time. Cycling times include the total time a monitoring system requires to sample, analyze, and record an emission measurement. Continuous monitoring systems for measuring opacity shall complete a minimum of one cycle of operation (sampling, analyzing, and data recording) for each successive ten second period.

3. Monitor location. All continuous monitoring systems or monitoring devices shall be installed such that the measurements obtained are representative measurements of emissions occurring within the discharged opacity profile.

4. Combined effluents. When the effluents from two or more affected facilities of similar design and operating characteristics are combined before being released to the atmosphere, opacity monitoring systems may be installed on the combined effluent.

5. Zero and drift. The owners or operators of all continuous monitoring systems installed in accordance with the requirements of this rule shall record the zero and drift at least once daily unless the manufacturer has recommended adjustments at shorter intervals, at which case such recommendations shall be followed, and shall adjust the zero and span whenever the twenty-four hour zero drift or twenty-four hour calibration drift limits in 40 CFR Part 60, Appendix B, "Performance Specification 1" are exceeded or whenever the twenty-four hour zero drift or twenty-four hour calibration drift exceed 10% of the emission standard.

6. Span. Instrument span shall be approximately 200% of the expected instrument data display output corresponding to the emission standard for the source.

(D) Minimum Data Requirements

1. Written reports required. Owners or operators of facilities required to install continuous monitoring systems shall submit a written report of excess emissions for each calendar quarter and the nature and cause of the excess emissions, if known, to the staff director. All quarterly reports shall be postmarked by the 30th day following the end of each calendar quarter.

2. Data summary. The data summary shall consist of the magnitude in actual percent opacity of all six minute averages of opacity greater than the opacity emission limitation. Average of values may be obtained by integration over the averaging period or by arithmetically averaging a minimum of twenty-four equally spaced instantaneous opacity measurements per six minute period. A one hour period means any sixty minute period commencing on the hour and a six minute period means any one of ten equal parts of a one hour period.

3. Inoperative periods. The date and time identifying each period during which the continuous monitoring system was inoperative (except for zero and span checks) and the nature of system repairs or adjustments shall be reported.

4. No excess emissions. When no excess emissions have occurred during the reporting period and the continuous monitoring system has not been inoperative, repaired, or adjusted, such information shall be included in the report.

5. Files to be maintained. Owners or operators of affected facilities shall maintain a file of all information reported in the quarterly summaries, and all other data collected either by the continuous monitoring system or as necessary to convert monitoring data to the units of the applicable standard, for a minimum of two years from the date of collection of such data or submission of such summaries.

(E) Special Considerations

1. Alternatives. Alternative monitoring requirements, system locations, and procedures for performing calibration checks which do not meet the requirements of this rule, but adequately demonstrate a definite and consistent relationship with the intent of this rule, may be approved by the staff director.

2. Exceptions

A. Coal fired steam generating units that have an annual boiler capacity factor of 30 percent or less as currently defined by the Federal Power Commission shall be exempt from these monitoring requirements.

B. Coal fired boilers and portland cement calcining kilns scheduled for retirement prior to January 1, 1981, shall be exempt from these monitoring requirements subject to receipt and approval of an affidavit by the staff director.

C. Coal fired boilers which utilize flue gas desulfurization equipment shall be exempt from these monitoring requirements.

D. Portland cement calcining kilns whose particulate emissions are controlled with bag–houses which emit from multiple stacks or vents shall be exempt from these opacity monitoring requirements.

(F) Compliance

1. Owners or operators of affected facilities shall submit a plan for meeting the requirements of this rule to the staff director within 60 days of its effective date.

2. Notwithstanding compliance with any other provision of this rule, no owner or operator of a facility affected by this rule will be deemed to be in compliance until the compliance plan receives the written approval of the staff director.

3. Effective dates of compliance. Facilities affected by this rule shall comply within twelve months of its effective date.

(5) Compliance Schedule

(A) Existing installations subject to section (1), other than incinerators, shall be in compliance with section (1) above by July 1, 1978. Those existing sources, except incinerators, which are subject to section (1) shall comply with the limitations of section (2) until July 1, 1978. All incinerators and new sources shall comply with section (1) on the effective date of this regulation.

Auth: section 203.050 RSMo (1969). Original rule filed March 14, 1967, effective March 24, 1967. Amended: Filed Jan. 14, 1977, effective July 11, 1977.

10 CSR 10-5.110 Restriction of Emission of Sulfur Dioxide for Use of Fuel

PURPOSE: This regulation restricts sulfur content of fuel and sulfur dioxide emissions from fuel burning installations.

(1) General Provisions

(A) This regulation shall apply to any installation in which fuel is burned and in which the sulfur dioxide emission is substantially due to the content of the fuel burned, and in which the fuel is burned primarily to produce heat.

(B) For purposes of this regulation, a fuel burning installation is any single fuel burning furnace or boiler or other unit, device, or contrivance in which fuel is burned or any grouping of two or more such furnaces or boilers or other units, devices, or contrivances on the same premises or otherwise located in close proximity to each other and under control of the same person. The capacity of such installations shall be the manufacturer's or designer's guaranteed maximum heat input rate.

(C) The method for determining the percent of sulfur in coal shall be that described in ASTM D-271-64 Laboratory Sampling and Analysis of Coal and Coke or equivalent method approved by the Executive Secretary. The method for determining the heat content of coal shall be as described in ASTM D-271-64 Laboratory Sampling and Analysis of Coal and Coke or D-2015-62T Gross Calorific Value of Solid Fuel by the Adiabatic Bomb Calorimeter. Sulfur content of coal as stated in this regulation shall be as analyzed on a dry basis, but calculated to include normal moisture.

(D) The method for determining the sulfur content of fuel oil shall be that described in ASTM D-129-64 Standard Method of Test for Sulfur in Petroleum Products and Lubricants by the Bomb Method.

(E) The method for determiming the heat content of fuel oil shall be that described in ASTM D-240-64 Standard Method of Test for Heat of Combustion of Liquid Hydrocarbons by Bomb Calorimeter or other method giving comparable results.

MISSOURI

10 CSR 10-5.110

(2) Restrictions Applicable to Fuel Burning Installations With a Capacity of 2,000 Million or More British Thermal Units Per Hour

(A) After three (3) years from effective date of this regulation, no person shall cause or permit the emission of sulfur dioxide to the atmosphere from any fuel burning installation with a capacity of 2,000 million or more British Thermal Units per hour in an amount greater than 2.3 pounds of sulfur dioxide per million British Thermal Units of heat input to the installation.

(3) Restrictions Applicable to Fuel Burning Installations With a Capacity of Less than 2,000 Million British Thermal Units Per Hour

(C) During the months of Oct., Nov. and Dec. of 1970 and Jan., Feb. and March of 1971 and every year thereafter, no person shall burn or permit the burning of any coal containing more than 2.0 percent sulfur or of any fuel oil containing more than 2.0 percent sulfur in any fuel burning installation having a capacity of less than 2,000 million British Thermal Units per hour.

(D) Subsections (A), (B), and (C) of this section (3) shall not apply to any fuel burning installation if it can be shown that emissions of sulfur dioxide from such installation into the atmosphere will not exceed 2.3 pounds per million BTU of heat input to the installation.

10 CSR 10-5.150 Emission of Certain Sulfur Compounds Restricted

PURPOSE: This regulation establishes the maximum allowable concentration of sulfur compounds in source emissions and in the ambient air, except where 10 CSR 10-5.280 would be applied.

(C) The method of measuring sulfur trioxide and sulfuric acid or any combination thereof in stack gases shall be:

1. Particulates (sulfuric acid-acid mists) Atmospheric Emissions from Sulfuric Acid Manufacturing Processes, Ref. Public Health Service Publication 999-AP-13 (1965), Appendix B, Page 61-6 (Modified Monsanto Company Method). Secondary reference for industrial emission sampling and analysis for particulates, (sulfuric acid-acid mists), Patton, W.F. and Brink, J.A., New Equipment and Techniques r Sampling Chemical Process Cases. J.Air Pollution Control Association 13, 162-66 (April 1963).

(E) The method of measuring sulfur dioxide in stack gases shall be:

1. Gaseous (sulfur trioxide-sulfur dioxide) Atmospheric Emissions from Sulfuric Acid Manufacturing Processes. Ref. Public Health Service Publication 999-AP-13 (1965). Appendix B. Page 85-7 (Shell Development Company Method). Secondary reference for industrial emission sampling and analysis for gases (sulfur trioxide and sulfur dioxide) Determination of Sulfur Dioxide and Sulfur Trioxide in Stack Gases, Emeryville Method Ser. 4S16/59a. Anal. Department Shell Development Company, Emeryville, Calif. (1959).

(2) Concentration of Sulfur Compounds in Emissions Restricted

(A) No person shall cause or permit the emission into the atmosphere from any existing source specified in subsection (1) (A) of this regulation, gases containing more than 2000 parts per million by volume of sulfur dioxide or 500 parts per million by volume of sulfur dioxide from any new source.

(B) No person shall cause or permit the emission into the atmosphere from any source specified in subsection (1) (A) of this regulation, gases containing more than 70 milligrams per cubic meter of sulfuric acid or sulfur trioxide or any combination thereof or 35 milligrams per cubic meter of sulfuric acid, sulfur trioxide or any combination thereof from any new source (expressed as sulfuric acid).

(3) Emission of Sulfur Compounds in Certain Amounts and Manner Restricted

(A) No person shall cause or permit the emission of sulfur dioxide from any premises in such manner and amounts that the concentrations and frequencies attributable to such emission exceed those shown in the following table in the ambient air at any occupied place beyond the premises on which the source is located: Concentration, 0.25 ppm by volume or more; averaging time, 5 minutes; maximum allowable frequency, once in any 8 hours. Concentration, 0.10 ppm by volume or more; averaging time, 1 hour; maximum allowable frequency, once in any four days. Concentration, 0.05 ppm by volume or more; averaging time, 24 hours; maximum allowable frequency, once in any 90 days.

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(6) No person shall cause, suffer or allow to be discharged into the outdoor atmosphere from any incinerator emissions which are of a shade or density darker than number ½ on the Ringelmann Chart or of greater than 10% opacity.

16-2.14(1)-S1460 VISIBLE AIR CONTAMINANTS, RESTRICTIONS

(1) No person shall cause, suffer, allow or permit emissions from any installations which are:

(a) Of a shade or density darker than that designated as No. 2 on the Ringelmann Chart, or

(b) Of such opacity as to obscure an observer's view to a degree greater than does smoke described in subsection (1) (a) of this regulation.

This section does not apply to existing incinerators or existing wood waste burners.

(2) No person shall discharge into the atmosphere from any single source of emission whatsoever any air contaminant:

(a) Shade or density darker than that designated as No. 1 on the Ringelmann Chart, or

(b) Of such opacity as to obscure an observer's view to a degree greater than does smoke described in subsection (2) (a) of this regulation.

(3) The provisions of Sections (1) and (2) of this rule shall not apply to emissions during the building of a new fire, cleaning of fires or soot blowing, the shade or density of which is less than No. 3 on the Ringelmann Smoke Chart or of such opacity as to obscure an observer's view to a degree greater than does smoke designated as No. 3 on the Ringelmann Smoke Chart for a period or periods aggregating no more than four minutes in any 60 minutes.

Where the presence of uncombined water is the only reason for failure of an emission to meet the requirements of Sections (1) and (2) of this regulation, such sections shall not apply.

The provisions of Section (1) of this regulation shall not apply to the following:

(a) Transfer of molten metals.

(b) Emissions from transfer ladles.

16-2.14(1)-S1470 SULFUR OXIDE EMISSIONS

(1) Regulation of Sulfur in Fuel.

(a) Commencing July 1, 1970, no person shall burn liquid or solid fuels containing sulfur in excess of two pounds of sulfur per million Btu fired.

(b) Commencing July 1, 1971, no person shall burn liquid or solid fuels containing sulfur in excess of 1.5 pounds of sulfur per million Btu fired.

(c) Commencing July 1, 1972, no person shall burn liquid or solid fuels containing sulfur in excess of one pound of sulfur per million Btu fired.

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(d) Commencing July 1, 1971, no person shall burn any gaseous fuel containing sulfur compounds in excess of 50 grains per 100 cubic feet of gaseous fuel, calculated as hydrogen sulfide at standard conditions. The provisions of Section (4) shall not apply to:

(i) The burning of sulfur, hydrogen sulfide, acid sludge or other sulfur compounds in the manufacturing of sulfur or sulfur compounds.

(ii) The incinerating of waste gases provided that the gross heating value of such gases is less than 300 Btu's per cubic foot at standard conditions and the fuel used to incinerate such waste gases does not contain sulfur or sulfur compounds in excess of the amount specified in this rule.

(iii) The use of fuels where the gaseous products of combustion are used as raw materials for other processes.

(iv) Small refineries (under 10,000 barrels per day crude oil charge) provided that they meet other provisions of this rule.

(2) Primary Non-Ferrous Smelters.

(a) No person or persons shall cause, suffer, allow or permit to be discharged into the outdoor atmosphere from any copper, zinc or lead smelting operation or any slag treatment plant reduced sulfur in excess of the amount shown in the following table:

Total Feed of Sulfur, lb/hr	Allowable Sulfur Emission, lb/hr		
	Cu	Zn	Pb
1,000	100	100	100
5,000	500	394	348
10,000	1,000	704	593
20,000	2,000	1,270	1,000
40,000	4,000	2,310	1,000
60,000	6,000	3,210	1,000
80,000	8,000	4,120	1,000
100,000	10,000	5,000	1,000
Over 100,000	10,000	5,000	1,000

(b) For a total sulfur feed input between any two consecutive total sulfur feed inputs stated in the preceding table, maximum allowable emissions are shown in Figure 1 which follows this rule and by reference, is made a part of this rule. For the purposes hereof, total sulfur input shall be calculated as the aggregate sulfur content of all fuels and other feed materials whose products of combustion and gaseous by-products pass through the stack or chimney.

(i) When two or more furnaces, sinter machines, sinter boxes, roasters, converters or other similar devices for converting copper, zinc or lead ores, concentrates, residues or slag to the metal or the oxide of the metal either wholly or in part are connected to a single stack, the combined sulfur input of all units connected to the stack shall be used to determine the allowable emission from the stack.

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(ii) When a single furnace, sinter machine, sinter box, roaster, converter or other similar device for converting copper, zinc or lead ores, concentrates, residues, or slag to the metal or the oxide of the metal either wholly or in part is connected to two or more stacks, the allowable emission from all the stacks combined shall not exceed that allowable from the same unit connected to a single stack.

(c) The effective date of this Section (2) for existing operations shall be June 30, 1973. For new operations, the effective date shall be June 30, 1970.

(3) Kraft Pulp Mills.

(a) No person or persons shall cause, suffer, allow or permit to be discharged into the outdoor atmosphere from any Kraft pulping mill total reduced sulfur in excess of 0.087 pounds per 1,000 pounds of black liquor from each recovery furnace stack or 17.5 parts per million, expressed as hydrogen sulfide on a dry gas basis, whichever is more restrictive or such other limit of TRS that proves to be reasonably attainable utilizing the latest in design of recovery furnace equipment, controls and procedures but not more than 0.087 pounds of TRS per 1,000 pounds of black liquor.

(b) Non-condensibles from digesters and multiple-effect evaporators shall be treated to reduce the emission of TRS equal to the reduction achieved by thermal oxidation in a lime kiln.

(c) Monitoring and Reporting:

(i) Every Kraft mill in the state shall install equipment for the continual monitoring of TRS.

(ii) The monitoring equipment shall be capable of determining compliance with these standards and shall be capable of continual sampling and recording of the concentrations of TRS contaminants during a time interval not greater than 30 minutes.

(iii) The sources monitored shall include, but are not limited to, the recovery furnace stacks and the lime kiln stacks.

(iv) Each mill shall sample the recovery furnace, lime kiln, and smelt tank for particulate emissions on a regularly scheduled basis in accordance with its approved sampling program.

(v) Each mill shall submit within 60 days after the effective date of this regulation a detailed monitoring program and time schedule for approval by the director. The equipment shall be ordered within 30 days after the monitoring program has been approved in writing by the director. The equipment shall be placed in effective operation in accordance with approved program within 60 days after delivery.

(vi) Unless otherwise authorized by the director, data shall be reported by each mill at the end of each calendar month as follows:

(aa) Daily average emission of TRS gases expressed in pounds of sulfur per 1,000 pounds of black liquor fired for each source included in the approved monitoring program.

(ab) The number of hours each day that the emission of TRS gases from each recovery furnace stack exceeds 17.5 parts per million dry and the maximum concentration of TRS measured each day.

(ac) Emission of TRS gases in pounds of sulfur per 1,000 pounds of black liquor fired in the Kraft recovery furnace on a monthly basis and pounds of sulfur per hour for the other sources included in the approved monitoring program. Emission of particulates in pounds per hour based upon a sampling conducted in accordance with the approved monitoring program.

(ad) Average daily Kraft pulp production in air-dried tons and average daily black liquor burning rate.

(ae) Other emission data as specified in the approved monitoring program.

(vii) Each Kraft mill shall furnish, upon request of the director, such other pertinent data as may be required to evaluate the mill's emission control program. Each mill shall immediately report abnormal mill operations which result in increased emissions of air contaminants, following procedures set forth in the approved monitoring program.

(d) All emission standards in Section (3) shall be based on average daily emissions. The limitations herein shall not preclude a requirement to install the highest and best practicable treatment and control available. New mills or mills expanding existing facilities may be required to meet more restrictive emission limits.

(e) Definitions:

"Continual monitoring" means sampling and analysis, in a continuous or timed sequence, using techniques which will adequately reflect actual emission levels or concentrations on a continuous basis.

"Kraft mill" or "mill" means any pulping process which uses, for cooking liquor, an alkaline sulfate solution containing sodium sulfide.

"Non-condensibles" means gases and vapors from the digestion and evaporation processes of a mill that are not condensed with the equipment used in those processes.

"Parts per million" means parts of a contaminant per million parts of gas by volume.

"Recovery furnace stack" means the stack from which the products of combustion from the recovery furnace are emitted to the ambient air.

"Total reduced sulfur (TRS)" means hydrogen sulfide, mercaptans, dimethyl sulfide, dimethyl disulfide, and any other organic sulfides present.

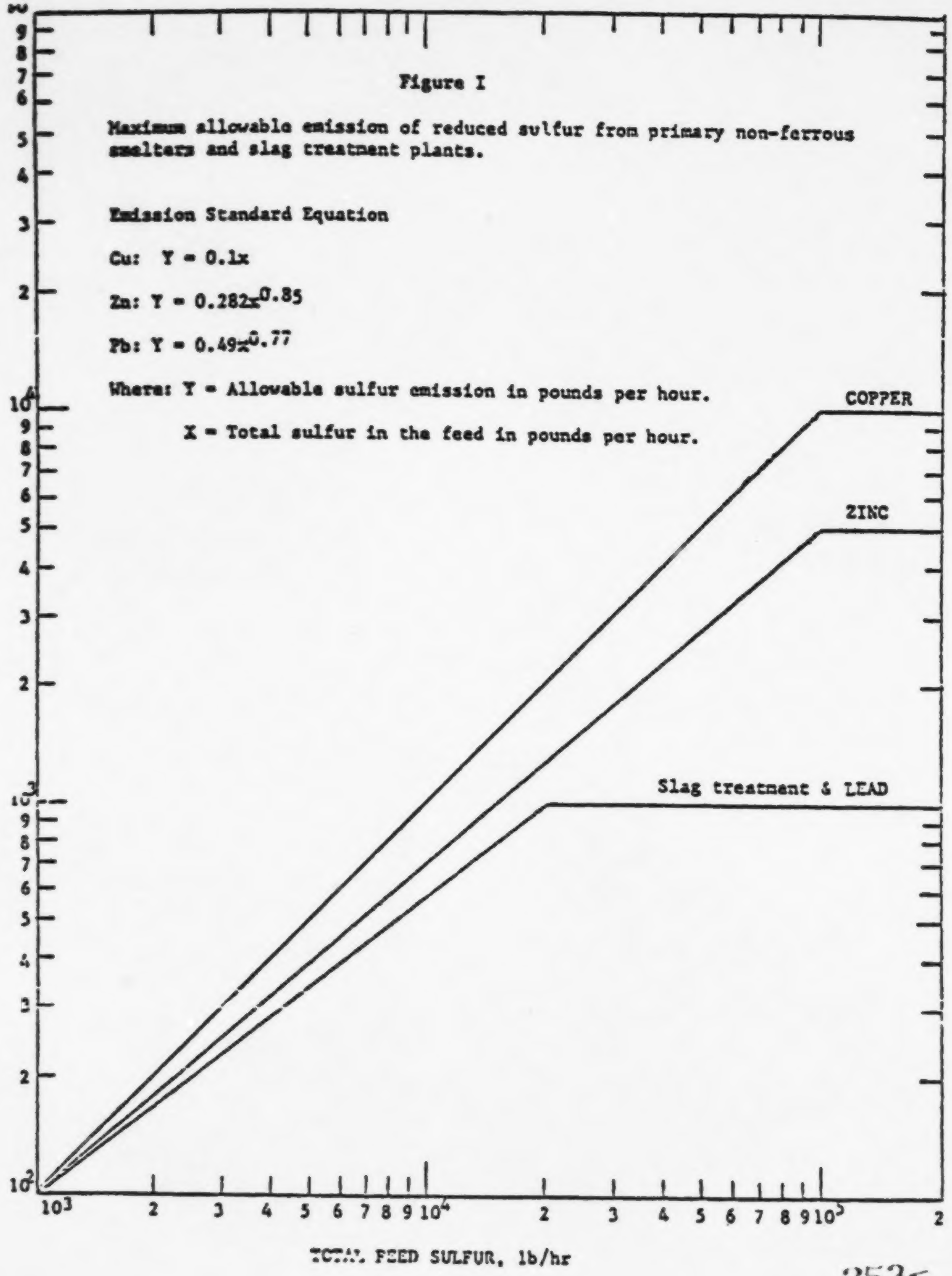

Figure I

Maximum allowable emission of reduced sulfur from primary non-ferrous smelters and slag treatment plants.

Emission Standard Equation

Cu: $Y = 0.1x$

Zn: $Y = 0.282x^{0.85}$

Pb: $Y = 0.49x^{0.77}$

Where: Y = Allowable sulfur emission in pounds per hour.

X = Total sulfur in the feed in pounds per hour.

NEBRASKA

RULE 9

(1) No person shall allow sulfur oxides to be emitted from any existing fossil fuel burning equipment in excess of two and one half (2.5) pounds per million BTU input, maximum 2-hour average.

(3) No person shall cause or allow hydrogen sulfide (H_2S) to be emitted from any industrial source in quantities that result in a concentration greater than or equal to .01 parts per million averaged during any two 30-minute periods of time at or beyond the property line of the source.

Method of measurement for hydrogen sulfide (H_2S) shall be the Methylene Blue Method as specified in "Methods of Air Sampling and Analysis," published by the American Public Health Association, 1972.

RULE 10

Nitric Acid Manufacturing--No owner or operator of an installation producing nitric acid either as an end product or for use in intermediate steps in production of other products will exceed the following limitations on the emission of oxides of nitrogen (calculated as nitrogen dioxide):

(a) 5.5 pounds per ton of 100 percent nitric acid produced; or

(b) A concentration of nitrogen dioxide equivalent to 400 parts per million (p.p.m.) by volume, whichever is more stringent.

RULE 13

Visible Emissions for Existing Stationary Sources. No person shall cause or allow emissions, except steam, from any existing source which are of a shade or density equal to or darker than that designated as No. 1 on the Ringelman Chart, or equivalent opacity of 20 percent (20%).

RULE 17

(3) No later than March 30, 1978 a continuous monitoring system for the measurement of opacity shall be installed and placed in operation by the owner or operator of any fossil-fired steam generator with greater than 250 million BTU per hour heat input. Exemptions from this requirement will be made if gaseous fuel and oil is the only fuel burned and the source has never been found to be in violation of Rule 13 of these regulations. Installation, calibration, operation and reporting shall be in accordance with the procedures specified in Volume 40, No. 194 of the Federal Register, October 6, 1975.

The Director may require the owner or operator of any other emissions source which is subject to the provisions of these regulations to install, use and maintain such stationary monitoring equipment as is required to demonstrate continuing compliance with any applicable emissions limitations, and to maintain records and make reports regarding such measured emissions to the Department in a manner and on a schedule to be determined by the Director.

NEVADA

ARTICLE 4

4.1 Unless otherwise provided herein, no person shall cause, suffer, allow, or permit the discharge into the atmosphere, from any stationary source, any air contaminant for a period or periods aggregating more than three minutes in any one hour which is of an opacity equal to or greater than 20 percent.

ARTICLE 6

6.2 Incinerator burning which produces, for periods totaling one minute in one hour, a visible emission which is of an opacity equal to or greater than 20 percent is prohibited.

ARTICLE 8

8.1.2 The maximum allowable weight discharged per hour for new industry will be determined by use of the following equations:

Copper smelters. . . . . . $Y = 0.1\ X$ $(Y = 0.1X)$
Zinc smelters. . . . . . . $Y = 0.25\ X^{0.85}$ $(Y = 0.282\ X^{0.85})$
Lead smelters. . . . . . . $Y = 0.41\ X^{0.77}$ $(Y = 0.49\ X^{0.77})$
X = Total feed sulfur, kg/hour (pounds/hour)
Y = Allowable sulfur emission, kg/hour (pounds/hour)

8.1.3 The maximum allowable weight discharged per hour for existing industry will be determined by use of the following equation:

Copper smelters. . . . . . $Y = 0.4\ X$
X = Total feed sulfur, kg/hour (pounds/hour)
Y = Allowable sulfur emission, kg/hour (pounds/hour)

8.2.1.1 Where a source located on contiguous property has a total heat input of less than 63 million kg-cal (250 million BTU's) per hour the allowable emission shall be calculated by the use of the following equation:

$Y = 1.26\ X$ $(Y = .7\ X)$
X = Operating heat input in millions of kg-cal (BTU's) per hour
Y = Allowable rate of sulfur emission in kg (pounds) per hour

8.2.1.2 Where a source located on contiguous property has a total heat input equal to or greater than 63 million kg-cal (250 million BTU's per hour, the allowable sulfur emission shall be calculated by the use of the following equations:

Liquid Fuel	Solid Fuel	Combination Fuel
$Y = 0.7\ X$ $(Y = 0.4\ X)$	$Y = 1.1\ X$ $(Y = 0.6\ X)$	$Y = \frac{L(.7) + S(1.1)}{L + S}$

X = Operating input in millions of kg-cal (BTU's) per hour
Y = Allowable rate of sulfur emissions in kg (pounds) per hour
L = Percentage of total heat input derived from liquid fuel
S = Percentage of total heat input derived from solid fuel

NEVADA

ARTICLE 8

8.3 **Other Sulfur Emitting Processes:**

8.3.1 No person shall cause, suffer, allow, or permit the emission of sulfur compounds where the sulfur originates in the material being processed (excluding sulfur from all solid, liquid, or gaseous fuel), in excess of the quantity determined by the following equation:

$E = 0.271P^{0.904} \qquad (0.292P^{0.904})$

when "E" is equal to or greater than 5 kilograms (10 pounds) per hour.

Where:

"E" is the allowable sulfur emission in kilograms (pounds) per hour.
"P" is the total feed sulfur in kilograms (pounds) per hour.

8.3.2 When "E" is less than 5 kilograms (10 pounds) per hour, the gas stream concentration shall not exceed 1,000 ppm by volume.

ARTICLE 14

(4) The owner or operator of the smelter subject to this paragraph shall not discharge or cause the discharge of sulfur dioxide into the atmosphere in excess of 65,000 pounds per hour (29,484 kilograms per hour) maximum 6 hour average as determined by the method specified in subparagraph (f)(6)(ii) or (IV) of this section. Such limitation shall apply to the sum total of sulfur dioxide emissions from the smelter processing units but not including uncaptured fugitive emissions and those emissions due solely to use of fuel for space heating or steam generators.

ARTICLE 16

16.1.2 Standard for Opacity

No source as defined in this Article shall exhibit greater than 20 percent opacity except that a maximum of 40 percent opacity shall be permissible for not more than 2 minutes in any hour.

16.1.3 Standard for Sulfur

No person shall cause, suffer, allow, or permit the discharge of sulfur from any affected facility as follows:

16.1.3.1 For solid fossil fuels, the sulfur emission shall not be in excess of 1.1 $Kg/10^6$ Kg-cal (0.6 $lb/10^6$ BTU) heat input.

ARTICLE 16

16.1.3.2 For liquid fossil fuels the sulfur emission shall not be in excess of 0.7 Kg/10^6 Kg-cal (0.4 lb/10^6 BTU) heat input.

16.1.3.3 When different fossil fuels are burned simultaneously in any combination, the sulfur emission shall not be in excess as determined by the following formula:

16.3.3 Standard for Opacity

16.3.3.1 No person shall cause, suffer, allow, or permit the discharge from any kiln gases which exhibit greater than 20 percent opacity.

16.3.3.2 No person shall cause, suffer, allow, or permit the discharge from any clinker cooler which exhibits greater than 10 percent opacity.

16.3.3.3 On or after the date on which the performance test required by Article 2.6 is completed, no owner or operator subject to the provision of Article 16.3 shall cause to be discharged into the atmosphere from any affected facility other than the kiln and clinker cooler any gases which exhibit 10% opacity or greater.

16.4.2 Standard for Opacity

No source as defined in this Article shall exhibit 10 percent opacity or greater.

16.5 Sulfuric Acid Plants

This Article is applicable to each sulfuric acid production unit.

16.5.1 Standard for Sulfur

No person shall cause, suffer, allow, or permit the emission of sulfur in excess of 1 Kg per metric ton (2 lb. per short ton) of acid produced, the production being expressed as 100 percent H_2SO_4.

16.5.2 Standard for Acid Mist

No person shall cuase, suffer, allow, or permit the emission of acid mist, expressed as H_2SO_4, in excess of 0.075 Kg per metric ton (0.15 lb. per short ton), the production being expressed as 100 percent H_2SO_4.

NEVADA

ARTICLE 16

16.5.3 Standard for Opacity

No person shall cause, suffer, allow, or permit the opacity to exceed 10 percent.

16.5.4 Emission Monitoring

This shall be done in accordance with Article 2 of these Regulations and 40 CFR 60.84.

16.6.2 Standard for Opacity

No person shall cause, suffer, allow, or permit the discharge which exhibits 20 percent opacity or greater.

16.7.2 Standard for Opacity

No person shall cause, suffer, allow, or permit the discharge into the atmosphere an opacity equal to or greater than 20 percent for no more than a period or periods aggregating more than three minutes in any one hour.

16.7.4 Standard for Sulfur Dioxide

16.7.4.1 No person shall burn in any fuel gas combustion device, any fuel gas which contains H_2S in excess of 230 mg/dscm (0.10 gr/dscf) except as provided in 16.7.4.2. The combustion of process upset gas in a flare, or the combustion in a flare of process gas or fuel gas which is released to the flare as a result of relief valve leakage, is exempt from this paragraph.

16.7.4.2 The owner or operator may elect to treat the gases resulting from the combustion of fuel gas in a manner which limits the release of sulfur dioxide to the atmosphere if it is shown to the satisfaction of the Director that this prevents sulfur dioxide emissions as effectively as compliance with the requirements of 16.7.4.1.

16.7.5 Emission Monitoring

This shall be done in accordance with Article 2 of these Regulations and 40 CFR 60.105.

16.9.2 Standard for Opacity

16.9.2.1 No person shall cause, suffer, allow, or permit the discharge of any gas into the atmosphere which exhibits 20% opacity or greater.

ARTICLE 16

16.9.2.2 On and after the date on which the performance test required to be conducted is completed, no owner or operator subject to the provisions of this section shall discharge or cause the discharge into the atmosphere from any pot furnace any gases which exhibit 10 percent opacity or greater.

16.9.3 Test Methods and Procedures

These shall be in accordance with Article 2 of these regulations and 40 CFR 60.123.

16.10.2 Standard for Opacity

16.10.2.1 No person shall cause, suffer, allow, or permit the discharge of any gas into the atmosphere which exhibits 20 percent opacity or greater from a reverberatory furnace.

16.10.2.2 On and after the date on which the performance test required to be conducted is completed, no owner or operator subject to the provisions of this Article shall discharge or cause the discharge into the atmosphere from any blast (cupola) or electric furnace any gases which exhibit 10 percent opacity or greater.

16.10.3 Test Methods and Procedures

These shall be done in accordance with Article 2 of these Regulations and 40 CFR 60.133.

16.11.2 Standard for Opacity

No person shall cause, suffer, allow, or permit the discharge into the atmosphere an opacity equal to or greater than 20 percent for no more than a period or periods aggregating more than three minutes in any one hour.

16.11.3 Test Methods and Procedures

These shall be done in accordance with Article 2 of these Regulations and 40 CFR 60.144.

16.12.2 Standard for Opacity

No person shall cause, suffer, allow, or permit the discharge into the atmosphere any gas which exhibits an opacity of 20 percent or greater.

16.12.3 Monitoring of Operations

This shall be done in accordance with Article 2 of these Regulations and 40 CFR 60.153.

ARTICLE 16

16.13.2 Standard for Opacity

16.13.2.1 No person shall cause, suffer, allow, or permit the discharge of visible emissions from any dryer which exhibits greater than 20 percent opacity.

16.13.2.2 No person shall cause, suffer, allow, or permit the discharge of visible emissions from any affected facility that uses a sulfuric acid plant to comply with the standard set forth in 16.13.3 which exhibits greater than 20 percent opacity.

16.13.3 Standard for Sulfur

16.13.3.1 No person shall cause, suffer, allow, or permit the discharge of sulfur into the atmosphere from any roaster, smelting furnace, or copper concentrator in excess of 0.845 g/m^3 except as provided in 16.13.3.2 and 16.13.3.3.

16.13.3.2 Reverberatory smelting furnaces shall be exempted from 16.13.3.1 during periods when the total smelter charge at the primary copper smelter contains a high level of volatile impurities.

16.13.3.3 A change in the fuel combusted in a reverberatory furnace shall not be considered a modification under this part.

16.13.3.4 All other portions of the affected facility shall comply with the standards set forth in Article 8 of these Regulations.

16.13.4 Monitoring of Operations

This shall be done in accordance with Article 2 of these Regulations and 40 CFR 60.165.

16.13.5 Test Methods and Procedures

These shall be done in accordance with Article 2 of these Regulations and 40 CFR 60.166.

16.14.2 Standard for Opacity

16.14.2.1 No person shall cause, suffer, allow, or permit the discharge of visible emissions into the atmosphere from any sintering machine which exhibits greater than 20 percent opacity.

16.14.2.2 No person shall cause, suffer, allow or permit the discharge of visible emissions from any affected facility that uses a sulfuric acid plant to comply with the standard set forth in 16.14.3 which exhibits greater than 20 percent opacity.

ARTICLE 16

16.14.3 Standard for Sulfur

16.14.3.1 No person shall cause, suffer, allow, or permit the discharge of sulfur into the atmosphere from any roaster in excess of 0.845 g/m^3.

16.14.3.2 Any sintering machine which eliminates more than 10 percent of the sulfur initially contained in the zinc sulfide ore concentrates will be considered as a roaster under 16.14.3.1.

16.14.3.3 All other portions of the affected facility shall comply with the standards set forth in Article 8 of these Regulations.

16.14.4 Monitoring of Operations

This shall be done in accordance with Article 2 of these Regulations and 40 CFR 60.175.

16.14.5 Test Methods and Procedures

These shall be done in accordance with Article 2 of these Regulations and 40 CFR 60.176.

16.15 Primary Lead Smelters

This Article is applicable to the following affected facilities in primary lead smelters:

Sintering machine, sintering machine discharge end, blast furnace, dross reverberatory furnace, electric smelting furnace, and converter.

16.15.2 Standard for Opacity

16.15.2.1 No person shall cause, suffer, allow, or permit the discharge of visible emissions into the atmosphere from any blast furnace, dross reverberatory furnace, or sintering machine discharge end which exhibits greater than 20 percent opacity.

16.15.2.2 No person shall cause, suffer, allow, or permit the discharge of visible emission into the atmosphere from any affected facility that uses a sulfuric acid plant to comply with the standard set forth in 16.15.3 which exhibits greater than 20 percent opacity.

16.15.3 Standard for Sulfur

16.15.3.1 No person shall cause, suffer, allow, or permit the discharge of sulfur into the atmosphere from any sintering machine, electric smelting furnace, or converter in excess of 0.845 g/m^3.

16.15.3.2 All other portions of affected facility shall comply with the stnadards set forth in Article 8 of these regulations.

16.15.4 Monitoring of Operations

This shall be done in accordance with Article 2 of these Regulations and 40 CFR 60.185.

16.15.5 Test Methods and Procedures

These shall be in accordance with Article 2 of these Regulations and 40 CFR 60.186.

16.16.2 Standard for Opacity

No person shall cause, suffer, allow, or permit the discharge of visible emission into the atmosphere from any potroom group any gases which exhibit 10 percent opacity or greater, or from any anode bake plant any gases which exhibit 20 percent opacity or greater.

16.16.3 Monitoring of Operation

This shall be done in accordance with Article 2 of these Regulations and 40 CFR 60.194.

16.16.4 Test Methods and Procedures

These shall be done in accordance with Article 2 of these Regulations and 40 CFR 60.195.

16.22.1.2 Exhibit 20 percent opacity or greater.

16.22.1.4 On and after the date on which the performance test required to be conducted is completed, an owner or operator subject to the provisions of this subpart shall not cause to be discharged into the atmosphere from any coal processing and conveying equipment, coal storage system, or coal transfer and loading system processing coal, gases which exhibit 20 percent opacity or greater.

16.23.1 Standard for Particulate Matter and Opacity

No person shall cause, suffer, allow, or permit to be discharged into the atmosphere from any electric submerged arc furnace any gases which:

16.24 Steel Plants: Electric Arc Furnaces

This Article is applicable to the affected facilities in steel plants, electric arc furnaces and dust handling equipment.

NEVADA

ARTICLE 16

16.24.1 Standard for Particulate Matter and Opacity

No person shall cause, suffer, allow, or permit to be discharged into the atmosphere from an electric arc furnace any gases which:

16.24.1.1 Exit from a control device and contain particulate matter in excess of 12 mg/dscm (0.0052 gr/dscf).

16.24.1.2 Exit from a control device and exhibit three percent opacity or greater.

16.24.1.3 Exist from a shop and, due solely to operations of any EAF(s), exhibit greater than zero percent shop opacity except:

16.24.1.3.1 Shop opacity greater than zero percent, but less than 20 percent, may occur during charging periods.

16.24.1.3.2 Shop opacity greater than zero percent, but less than 40 percent, may occur during tapping periods.

16.24.1.3.3 Opacity standards under 16.24.1.3 shall apply only during periods when flow rates and pressures are being established under Article 16.24.3.

16.24.1.3.4 Where the capture system is operated such that the roof of the shop is closed during the charge and the tap, and emissions to the atmosphere are prevented until the roof is opened after completion of the charge or tap, the shop opacity standards under 16.24.1.3 shall apply when the roof is opened and shall continue to apply for the length of time defined by the charging and/or tapping periods.

16.24.1.4 On and after the date on which the performance test required to be conducted is completed, no owner or operator subject to the provisions of this subpart shall cause to be discharged into the atmosphere from dust-handling equipment any gases which exhibit 10 percent opacity or greater.

16.24.2 Emission Monitoring

This shall be done in accordance with Article 2 of these Regulations and 40 CFR 60.273.

16.24.3 Monitoring of Operations

This shall be done in accordance with Article 2 of these Regulations and 40 CFR 60.274.

16.24.4 Test Methods and Procedures

These shall be done in accordance with Article 2 of these Regulations and 40 CFR 60.275.

2.16.3.2 Specific identification of each period of excess emissions that occur during startups, shutdowns, and malfunctions of the affected facility. The nature and cause of any malfunction (if known), the corrective action taken or preventative measures adopted.

2.16.4 Any owner or operator subject to the provisions of this part shall maintain a file of all measurements, including continuous monitoring system, monitoring device, and performance testing measurements; all continuous monitoring system performance evaluations; all continuous monitoring system or monitoring device calibration checks; adjustments and maintenance performed on these systems or devices; and all other information required by this part recorded in a permanent form suitable for inspection. The file shall be retained for at least two years following the date of such measurements, maintenance, reports, and records.

2.17 Monitoring Requirements:

2.17.1 Unless otherwise approved by the Director or specified in applicable subparts, the requirements of this section shall apply to all continuous monitoring systems required under applicable subparts.

2.17.2 All continuous monitoring systems and monitoring devices shall be installed and operational prior to conducting performance tests under 2.6. Verification of operational status shall, as a minimum, consist of the following:

2.17.2.1 For continuous monitoring systems referenced in 2.17.3.1, completion of the conditioning period specified by applicable requirements in Appendix B of 40 CFR 60.

2.17.2.2 For continuous monitoring systems referenced in 2.17.3.2, completion of seven days of operation.

2.17.2.3 For monitoring devices referenced in applicable subparts, completion of the manufacturer's written requirements or recommendations for checking the operation or calibration of the device.

2.17.3 During any performance tests required under 2.6 or within 30 days thereafter and at such other times as may be required by the Director under section 114 of the Act, the owner or operator of any affected facility shall conduct continuous monitoring system performance evaluations and furnish the Director within 60 days thereof two or, upon request, more copies of a written report of the results of such tests. These continuous monitoring system performance evaluations shall be conducted in accordance with the following specifications and procedures:

2.17.3.1 Continuous monitoring systems listed within this paragraph except as provided in 2.17.3.2 shall be evaluated in accordance with the requirements and procedures contained in the applicable performance specification of Appendix B of 40 CFR 60 as follows:

a. Continuous monitoring systems for measuring opacity of emissions shall comply with Performance Specification 1.

b. Continuous monitoring systems for measuring nitrogen oxides emissions shall comply with Performance Specification 2.

c. Continuous monitoring systems for measuring sulfur dioxide emissions shall comply with Performance Specification 2.

d. Continuous monitoring systems for measuring the oxygen content or carbon dioxide content of effluent gases shall comply with Performance Specification 3.

2.17.3.2 An owner or operator who, prior to September 11, 1974, entered into a binding contractual obligation to purchase specific continuous monitoring system components except as referenced by 2.17.3.2c, shall comply with the following requirements:

a. Continuous monitoring systems for measuring opacity of emissions shall be capable of measuring emission levels within ±20 percent with a confidence level of 95 percent. The Calibration Error Test and associated calculation procedures set forth in Performance Specification 1 of 40 CFR 60, Appendix B shall be used for demonstrating compliance with this specification.

b. Continuous monitoring systems for measurement of nitrogen oxides or sulfur dioxide shall be capable of measuring emission levels within ±20 percent with a confidence level of 95 percent. The Calibration Error Test, the Field Test for Accuracy (Relative), and associated operating and calculation procedures set forth in Performance Specification 2 of 40 CFR 60, Appendix B shall be used for demonstrating compliance with this specification.

c. Owners or operators of all continuous monitoring systems installed on an affected facility prior to October 6, 1975, are not required to conduct tests under 2.17.3.2a and/or 2b of this section unless requested by the Director.

2.17.3.3 All continuous monitoring systems referenced by 2.17.3.2 shall be upgraded or replaced (if necessary) with new continuous monitoring systems, and such improved systems shall be demonstrated to comply with applicable performance specifications under 2.17.3.1 by September 11, 1979.

2.17.4 Owners or operators of all continuous monitoring systems installed in accordance with the provisions of this part shall check the zero and span drift at least once daily in accordance with the method prescribed by the manufacturer of such systems unless the manufacturer recommends adjustments at shorter intervals, in which case such recommendations shall be followed. The zero and span shall, as a minimum, be adjusted whenever the 24-hour zero drift or 24-hour calibration drift limits of the applicable performance specifications in 40 CFR 60, Appendix B, are exceeded.

For continuous monitoring systems measuring opacity of emissions, the optical surfaces exposed to the effluent gases shall be cleaned prior performing the zero or span drift adjustments except that for systems using automatic zero adjustments, the optical surfaces shall be cleaned when the cumulative automatic zero compensation exceeds four percent opacity. Unless otherwise approved by the Director, the following procedures, as applicable, shall be followed:

2.17.4.1 For extractive continuous monitoring systems measuring gases, minimum procedures shall include introducing applicable zero and span gas mixtures into the measurement system as near the probe as is practical. Span and zero gases certified by their manufacturer to be traceable to National Bureau of Standards reference gases shall be used whenever these reference gases are available. The span and zero gas mixtures shall be the same composition as specified in 40 CFR 60, Appendix B. Every six months from date of manufacture, span ad zero gases shall be reanalyzed by conducting triplicate analyses with Reference Methods 6 for SO_2, 7 for NO_x, and 3 for O_2 and CO_2, respectively. The gases may be analyzed at less frequent intervals if longer shelf lives are guarateed by the manufacturer.

2.17.4.2 For non-extractive continuous monitoring systems measuring gases, minimum procedures shall include up-scale check(s) using a certified calibration gas cell or test cell which is functionally equivalent to a known gas concentration. The zero check may be performed by computing the zero value from upscale measurements or by mechanically producing a zero condition.

2.17.4.3 For continuous monitoring systems measuring opacity of emissions, minimum procedures shall include a method for producing a simulated zero opacity condition and an upscale (span) opacity condition using a certified neutral density filter or other related technique to produce a known obscuration of the light beam. Such procedures shall provide a system check of the analyzer internal optical surfaces and all electronic circuitry including the lamp and photodetector assembly.

2.17.5 Except for system breakdowns, repairs, calibration checks, and zero and span adjustments required under 2.17.4, all continuous monitoring systems shall be in continuous operation and shall meet minimum frequency of operation requirements as follows:

2.17.5.1 All continuous monitoring systems referenced by 2.17.3.1 and 2.17.3.2 for measuring opacity of emissions shall complete a minimum of one cycle of operation (sampling, analyzing, and data recording) for each successive 10-second period.

2.17.5.2 All continuous monitoring systems referenced by 2.17.3.1 for measuring oxides of nitrogen, sulfur dioxide, carbon dioxide, or oxygen shall complete a minimum of one cycle of operation (sampling, analyzing, and data recording) for each successive 15-minute period.

2.17.5.3 All continuous monitoring systems referenced by 2.17.3.2, except opacity, shall complete a minimum of one cycle of operation (sampling, analyzing, and data recording) for each successive one-hour period.

2.17.6 All continuous monitoring systems or monitoring devices shall be installed such that representative measurements of emissions or process parameters from the affected facility are obtained. Additional procedures for location of continuous monitoring systems contained in the applicable Performance Specifications of Appendix B of this part shall be used.

2.17.7 When the effluents from a single affected facility or two or more affected facilities subject to the same emission standards are combined before being released to the atmosphere, the owner or operator may install applicable continuous monitoring systems on each effluent or on the combined effluent. When the affected facilities are not subject to the same emission standards, separate continuous monitoring systems shall be installed on each effluent. When the effluent from one affected facility is released to the atmosphere through more than one point, the owner or operator shall install applicable continuous monitoring systems on each separate effluent unless the installation of fewer systems is approved by the Director.

2.17.8 Owners or operators of all continuous monitoring systems for measurement of opacity shall reduce all data to six-minute averages and for systems other than opacity to one-hour averages. Six-minute opacity averages shall be calculated from 24 or more data points equally spaced over each six-minute period. For systems other than opacity, one-hour averages shall be computed from four or more data points equally spaced over each one-hour period. Data recorded during periods of system breakdowns, repairs, calibration checks, and zero and span adjustments shall not be included in the data averages computed under this paragraph. An arithmetic or integrated average of all data may be used. The data output of all continuous monitoring systems may be recorded in reduced or nonreduced form (e.g. ppm pollutant and percent O_2 or lb/million Btu of pollutant). All excess emissions shall be converted into units of the standard using the applicable conversion procedures specified in subparts. After conversion into units of the standard, the data may be rounded to the same number of significant digits used in subparts to specify the applicable standard (e.g. rounded to the nearest one percent opacity).

2.17.9 Upon written application by an owner or operator, the Director may approve alternatives to any monitoring procedures or requirements of this part including, but not limited to the following:

2.17.9.1 Alternative monitoring requirements when installation of a continuous monitoring system or monitoring device specified by this part would not provide accurate measurements due to liquid water or other interferences caused by substances with the effluent gases.

2.17.9.2 Alternative monitoring requirements when the affected facility is infrequently operated.

2.17.9.3 Alternative monitoring requirements to accommodate continuous monitoring systems that require additional measurements to correct for stack moisture conditions.

2.17.9.4 Alternative locations for installing continuous monitoring systems or monitoring devices when the owner or operator can demonstrate that installation at alternate locations will enable accurate and representative measurements.

2.17.9.5 Alternative methods of converting pollutant concentration measurements to units of the standards.

2.17.9.6 Alternative procedures for performing daily checks of zero and span drift that do not involve use of span gases or test cells.

2.17.9.7 Alternatives to the A.S.T.M. test methods or sampling procedures specified by any subpart.

2.17.9.8 Alternative continuous monitoring systems that do not meet the design or performance requirements in Performance Specification 1, 40 CFR 60, Appendix B, but adequately demonstrate a definite and consistent relationship between their measurements and the measurements of by a system complying with the requirements in Performance Specification 1. The Director may require that such demonstration be performed for each affected facility.

a. Alternative monitoring requirements when the effluent from a single affected facility or the combined effluent from two or more affected facilities are released to the atmosphere through more than one point.

2.17.10 All stationary sources identified in 40 CFR 51, Appendix P, paragraph 1.1, as shall be amended from time to time, are required to install, calibrate, operate, and maintain all monitoring equipment necessary for continuously monitoring the pollutants specified in Appendix P for the applicable source category.

2.17.10.1 Those sources specified by reference in 2.17.10 must meet the basic requirements of 40 CFR 51, Appendix P, paragraph 2.0 et seq.

NEW HAMPSHIRE

NEW HAMPSHIRE

REGULATION 4

III. Visible Emission Control and Prohibition

1. Existing

A. Visible emissions from existing fuel burning equipment. No person shall cause, suffer, allow, or permit emissions from any existing fuel burning equipment (i.e., equipment installed prior to the effective date of this regulation), which are darker in shade or appearance than that designated as No. 2 on the Ringelmann Smoke Chart; or of such opacity as to obscure an observer's view to a degree greater than does smoke designated as No. 2 on the Ringelmann Smoke Chart.

B. Visible emissions from new fuel burning equipment. No person shall cause, suffer, allow, or permit emissions from new fuel burning equipment (i.e., equipment installed on or after the effective date of this regulation), which are darker in shade or appearance than that designated as No. 1 on the Ringelmann Smoke Chart; or of such opacity as to obscure an observer's view to a degree greater than does smoke designated as No. 1 on the Ringelmann Smoke Chart.

C. Major repairs to existing equipment. When it becomes necessary to replace fuel burning equipment, it will be considered that the combustion equipment is new and will be required to operate within the limits imposed in Paragraph III.B. above.

D. Exceptions. The provisions of subsections III.A. and III.B. shall not apply to emissions during the building of a new fire, cleaning of fires, or soot blowing, the shade or appearance of which may exceed No.2 on the Ringelmann Smoke Chart for a period or periods aggregating no more than six minutes in any 60 minutes. Those installations equipped with automatic soot blowers will be permitted to exceed No. 2 on the Ringelmann Smoke Chart for a period not to exceed 60 minutes in any 8-hour period.

2. For new steam generators over 250 million BTU/hr. heat input, visible emissions shall not exceed 20% opacity except for 2 minutes in any one hour emissions may be as great as 40% opacity.

REGULATION 6

VI. Emission Standards for New Incinerators

Incinerators constructed, reconstructed, installed, or substantially altered after April 15, 1970, shall conform to the following emission standards:

A. There shall not be discharged into the atmosphere from any incinerator any air contaminant for a period or periods aggregating more than three minutes in any one hour which exhibits 20% opacity or greater as determined with test methods or with opacity monitors approved by the Agency. Visual opacity shall be determined in accordance with the Code of Federal Regulations, 40 CFR 60, appendix A, Reference Method 9, amended.

VII. Emission Standards for Existing Incinerators

Incinerators existing on the effective date of this regulation shall conform to the following standards:

A. There shall not be discharged into the atmosphere from any existing incinerator any air contaminant for a period or periods aggregating more than three minutes in any one hour which exhibits 20% opacity or greater as determined with test methods or opacity monitors approved by the Agency. Visual opacity shall be determined in accordance with the Code of Federal Regulations, 40 CFR 60, Appendix A, Reference Method 9.

REGULATION 6

B. Existing incinerators having a capacity of 90.72 kilograms (200 pounds) or less per hour shall not emit more than 0.675 grams per dry standard cubic meter (0.3 grains of particulate matter per standard cubic foot) of dry flue gas corrected to 12 percent of carbon dioxide (without the contribution of carbon dioxide from auxiliary fuel).

C. Existing incinerators of over 90.72 kilograms (200 pounds) per hour capacity shall not emit more than 0.45 grams per dry standard cubic meter (0.2 grains of particulate matter per standard cubic foot) of dry flue gas corrected to 12 percent carbon dioxide (without the contribution of carbon dioxide from auxiliary fuel).

VIII. Testing

The Agency may require any person owning or operating the equipment to conduct or have conducted testing to determine compliance with this regulation. The Agency may, at its option, witness or conduct such tests. Such testing will be done at a reasonable time and all data obtained will be provided to both parties.

A. Testing to determine the quantity of emission shall be undertaken by methods of measurement accepted by the Environmental Protection Agency and the Agency, and at a point or points such as to be representative of the actual emissions into the atmosphere.

REGULATION 7

IV. Emission Standards

Waste burners constructed, installed, reconstructed, or substantially altered after the effective date of this regulation shall conform to the following emission standards:

A. There shall not be discharged into the atmosphere from any waste burner any air contaminant for a period or periods aggregating more than three minutes in any hour which is as dark or darker in shade as that designated as No. 2 of the Ringelmann Chart or determined by use of an M.S.A. Smokescope, or of such opacity as to obscure an observer's view to a degree greater than does smoke designated as #2 on the Ringelmann Smoke Chart.

B. Particulate matter shall not be discharged into the atmosphere from any waste burner which exceeds 0.3 grains per standard cubic foot of dry flue gas corrected to 12 percent carbon dioxide (without the contribution of carbon dioxide from an auxiliary fuel).

V. Testing

The Agency may require any person owning or operating the equipment to conduct or have conducted testing to determine compliance with this regulation. The Agency may, at its option, witness or conduct such tests. Such testing will be done at a reasonable time and all data obtained will be provided to both parties.

A. Testing to determine the quantity of emission shall be undertaken by methods of measurement accepted by the National Air Pollution Control Administration or the Agency, and at a point or points such as to be representative of the actual emission into the atmosphere.

B. When the Agency conducts or has conducted such tests, the person owning or operating the equipment shall provide such sampling ports as might be required, power and water spources and safety equipment such as scaffolding, railing, ladders, etc., to comply with generally accepted good safety practices.

NEW HAMPSHIRE

REGULATION 7 (Cont.)

VI. Existing Waste Burners

Five years from the effective date of this regulation all waste burners shall meet the emission standards set forth in Section IV of this regulation.

VII. Exception

Backyard waste burners as excepted under the conditions specified in Section IV. G. of Regulation I are excepted from this regulation.

REGULATION 8

III. Emission of Smoke Prohibited

A. No person shall cause, suffer, allow, or permit the emission of smoke into the open air from any fuel burning equipment operated in conjunction with an asphalt plant darker in shade or appearance than that designated as No. 1 on the Ringelmann Smoke Chart, or of such opacity as to obscure an observer's view to a degree greater than does smoke designated as No. 1 on the Ringelmann Smoke Chart.

B. Subsection III.A shall not apply to smoke emitted by plants existing prior to June 1, 1974 during the starting operation and a Ringelmann No. 3 (60% equivalent opacity) or less shall be permitted for a period not to exceed three minutes per startup.

IV. Control of Particulate Emissions

A. Existing Asphalt Plants

No person shall cause, suffer, allow, or permit particulate emission from a plant into the open air in excess of the quantities listed in the following table:

Aggregate Process Rate Pounds per Hour	Stack Emission Rate Pounds per Hour
10,000	10
20,000	15
30,000	22
40,000	28
50,000	31
100,000	33
200,000	37
300,000	40
400,000	43
500,000 and above	47

For a process weight between any two consecutive process weights stated in this table, the emission limitation shall be determined by interpolation.

B. New or Modified Asphalt Plants

No person shall cause, suffer, allow or permit the operation of a new or modified asphalt plant in such a manner as to (a) emit particulate matter in excess of 90 milligrams per dry normal cubic meter (0.04 gr/dscf); (b) exhibit 20% opacity or greater. Where the presence of uncombined water is the only reason for failure to meet the requirements of this paragraph, such failure shall not be a violation of this part.

NEW HAMPSHIRE

REGULATION 14

III. Prohibition

A. No personel shall cause, suffer, allow, or permit the emission of particulat matter or fumes in any one hour period from non-ferrous foundries, smelters or investment casting facilities which will exceed those limits specified in Table 1. If any of these facilities emit particulate matter of a toxic nature, these emissions are to be further limited in accordance with Table 2.

B. No person shall cause, suffer, allow or permit the emission of gaseous pollutants from non-ferrous foundries, smelters or investment casting facilities which exceed those limits specified in Table 3.

C. On or after the effective date of this part, no person shall operate a new or modified secondary lead smelter in such a manner as to discharge or cause the discharge into the atmosphere of any gases

1. from blast (cupola) furnaces which:

   a. contain particulate matter in excess of 50 mg/dscm (0.022 gr/dscf)

   b. exhibit 20% opacity or greater

2. from electric furnaces (pot furnaces) which exhibit 10% opacity or greater.

D. On or after the effective date of this part no person shall operate a new or modified secondary brass and bronze ingot production plant in such a manner as to discharge or cause the discharge into the atmosphere any gases

1. from a reverbatory furnaces of 1000 kg (2,205 lb) or greater production capacity which:

   a. contains particulate matter in excess of 50 mg/dscm (0.022 gr/dscf)

   b. exhibit 20% opacity or greater

2. from electric furnaces of 1000 kg (2,205 lb) or greater production capacity, and/or blast (cupola) furnace of 250 kg/hr (550 lbs/hr) or greater production capacity which exhibit 10% opacity or greater.

Table 3

Limitations on emission of sulfur oxides (as SO_2) from primary non-ferrous smelters are required in accordance with the following equations, for new installations:

Copper Smelters	$Y = 0.2X$
Zinc Smelters	$Y = 0.564X^{0.85}$
Lead Smelters	$Y = 0.98X^{0.77}$

where:

X = Total sulfur fed to smelter (lb./hr.)

Y = Sulfur dioxide emission (lb./hr.)

REGULATION 15

E. No person shall cause, suffer, allow or permit the emission of TRS from Kraft Mill recovery furnace stacks in excess of 2 pounds of sulfur per ton of air dried pulp.

F. No person shall cause, suffer, allow or permit the emission of sulfur oxides, calculated as sulfur dioxide, from existing sulfite mills in excess of 20 pounds per ton of air dried pulp.

NEW JERSEY

7:27-3.2

(b) No person shall cause, suffer, allow or permit smoke the shade or appearance of which is darker than Number 1 on the Ringelmann Smoke Chart or greater than 20 percent opacity, exclusive of visible condensed water vapor, to be emitted into the outdoor air from the combustion of fuel in any stationary indirect heat exchanger having a rated hourly capacity of 200 million BTU or greater gross heat input and discharging through a stack or chimney having all internal cross-sectional dimensions of 60 inches or greater.

7:27-7.2

(a) No person shall cause, suffer, allow or permit sulfur compounds in the form of gases, vapors, or liquid particles to be discharged from any stack or chimney into the outdoor atmosphere except as provided in this Section.

7:27-9.2

(a) On and after the effective dates no fuel merchant shall store, offer for sale, sell, deliver for use or exchange in trade, for use in New Jersey, and no person shall use commercial fuel oils which contain sulfur in excess of the percentages by weight set forth in the following table:

Grades of Commercial Fuel Oil	Classification by SSU Viscosity at 100°F	Percent Sulfur by Weight		
		Effective 5/1/68	Effective 10/1/70	Effective 10/1/71
No. 2 & lighter	Less than or equal to 45	0.3%	0.3%	0.2%
No. 4	Greater than 45 but less than 145	0.7%	0.4%	0.3%
No. 5, No. 6 & heavier	Equal to or greater than 145	1.0%	0.5%	0.3%

7:27-9.3

(g) Whenever the discharge from a stack or chimney includes SO_3 and H_2SO_4:

1. The combined concentration of SO_3 and H_2SO_4 in the gases being discharged, when converted and expressed as H_2SO_4, shall not exceed 10 milligrams per cubic foot at standard conditions; and

2. The combined quantity of SO_3 and H_2SO_4 discharged in any 60-minute period, when converted and expressed H_2SO_4, shall not exceed the allowable emission as set forth in subsection (r) of this Section and at any instant the maximum rate of emission expressed in pounds per hour shall not exceed twice the allowable emission.

7:27-10.2

(a) On and after the effective dates, no coal merchant shall store, offer for sale, sell, deliver for use, or exchange in trade, for use in New Jersey, bituminous and/or anthracite coal containing sulfur in excess of the percentages by weight set forth in the following table:

Type Coal	Percent Sulfur by Weight (Dry Basis)	
	Effective 5/6/68	Effective 10/1/71
Bituminous	1.0%	0.2%
Anthracite	0.7%	0.2%

(b) Smoke emission standards shall be as follows:

1. The provisions of Subchapter 3 (Smoke) of this Chapter insofar as they relate to smoke from incinerators are superseded by this subsection.

2. No person shall cause, suffer, allow or permit smoke from any incinerator the shade or appearance of which is darker than Number 1 of the Ringelmann Smoke Chart.

i. To be emitted into the open air; or

ii. To be emitted of such opacity within a stack or chimney, or exclusive of water vapor, of such opacity leaving a stack or chimney to a degree greater than the emission designated at Number 1 of the Ringelmann Smoke Chart.

3. The provisions of paragraph 2 of this Subsection shall not apply to:

i. Smoke emitted during the building of a new fire the shade or appearance of which is not greater than Number 2 of the Ringelmann Smoke Chart for a period of three consecutive minutes; or

ii. Emissions of such opacity within a stack or chimney, or exclusive of water vapor, of such opacity leaving a stack or chimney to a degree greater than the emission designated as Number 2 of the Ringelmann Smoke Chart for a period not greater than three consecutive minutes.

NEW MEXICO

"401. Regulation to Control Smoke

A. Except as provided in Regulations 301 and 402 and the remainder of this regulation, no person shall permit, cause, suffer or allow the emission into the open air of any smoke having a density or shade greater than #1 on the Ringelmann scale for a period or periods aggregating more than one minute in any consecutive thirty minute period.

"402. WOODWASTE BURNERS.—

A. After May 1, 1975, except as provided in Subsections A.1., A.2., Section E and Section G, no person owning or operating a woodwaste burner shall permit, cause, suffer or allow emissions from the woodwaste burner to equal or exceed an opacity of 20 per cent; and no person owning or operating a woodwaste burner which operates during night time hours shall permit the temperature of the woodwaste burner exhaust gases to be lower than 750° F. during night time hours unless the owner or operator can demonstrate, to the satisfaction of the department, that a lower temperature can achieve an opacity of 20 per cent or better.

1. Section A shall not apply during the first sixty minutes of the daily operation of a woodwaste burner.

2. No person owning or operating a woodwaste burner shall permit, cause, suffer or allow emissions from the woodwaste burner to equal or exceed an opacity of 40 per cent during the daily burndown period.

3. For the purposes of this section, "daily burndown" means the period of operation during which the supply of woodwaste to the burner has stopped and the operation of the sawmill has ceased and does not include work shift changes.

E. After May 1, 1975, no person owning or operating a certified "contingency-use woodwaste burner" shall permit, cause, suffer or allow emissions to equal or exceed an opacity of 40 per cent.

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B. No person owning or operating an existing nonferrous smelter shall permit, cause, suffer or allow particulate matter emissions to the atmosphere from:

4. the stack or stacks serving the fire refining furnace in excess of 20% opacity except during the first 30 minutes of the poling process where the opacity will be limited to 40%.

NEW MEXICO

601. REGULATION GOVERNING EMISSION FROM KRAFT MILLS.--Kraft Mills means any industrial operation which uses for a cooking liquor an alkaline solution containing sulfur compounds in its pulping process.

A. No person shall permit, cause, or suffer or allow the daily average emission of Total Reduced Sulfur from a recovery furnace stack to exceed 0.1 pounds of sulfur per ton of equivalent air dried kraft pulp expressed as H_2S on a dry gas basis, or 4.0 pounds of particulate matter per ton of pulp on the same basis. A recovery furnace stack means the stack from which the products of combustion are emitted to the ambient air from the recovery furnace.

"602. Coal Burning Equipment - Sulfur Dioxide

A. No person owning or operating new coal burning equipment having a power generating capacity in excess of 25 megawatts or a heat input of greater than 250 million British Thermal Units per hour shall permit, cause, suffer or allow sulfur dioxide emissions to the atmosphere in excess of .34 pounds per million British Thermal Units of heat input.

B. No person owning or operating existing coal burning equipment shall permit, cause, suffer or allow sulfur dioxide emissions to the atmosphere:

1. after July 31, 1977, in excess of 35 percent by weight of the sulfur dioxide which would be produced upon combustion of the coal prior to any pretreatment if the coal burning equipment has a rated heat capacity greater than 250 million British Thermal Units (higher heating value) and less than 3,000 million British Thermal Units (higher heating value) per hour.

(**B. After December 31, 1974, no person owning or operating existing coal)
(burning equipment having a power generating capacity in excess of 25)
(megawatts or a heat input of greater than 250 million British Thermal)
(Units per hour shall permit, cause, suffer or allow sulfur dioxide)
(emissions to the atmosphere in excess of one pound per million British)
(Thermal Units of heat input.)

As used in this subsection, "pretreatment" means washing or any other method of removing sulfur from the coal prior to its combustion and does not include crushing or blending operations.

C. 1. "new coal burning equipment" means coal burning equipment the construction of which is commenced after September 1, 1971.

(continued on next page)

* Correction to the following regulation has been made due to New Mexico Court of Appeals Decision in Public Service Company of New Mexico, et al, vs New Mexico Environmental Improvement Board, 88 NM ______, 549 P2d 638, (CA 1976)

** This section applies only to existing coal burning equipment having a rated heat capacity greater than 3,000 million British Thermal Units (higher heating value) per hour. Adopted March 25, 1972.

2. "existing coal burning equipment" means coal burning equipment that was fully constructed and operational or under construction prior to September 1, 1971;

D. Compliance with this section shall be determined by a method consistent with the manual method of sampling for sulfur dioxide set forth by the Environmental Protection Agency at 36 Federal Register 24882 - 24891 or any other method receiving prior approval by the department.

E. After July 1, 1977, no person owning or operating existing coal burning equipment subject to this regulation shall permit, cause, suffer or allow operation of the existing coal burning equipment without normally maintaining in good operating condition at least one monitor, approved by the department, which shall continuously measure and record sulfur dioxide concentrations in the gases within the stack from which the gases are released to the atmosphere. Instruments and sampling systems installed and used pursuant to this section shall be calibrated in accordance with the methods prescribed by manufacturer's recommended zero adjustment and calibration check procedures at least once every 24 hours of operation, unless the manufacturer specifies or recommends calibration checks more frequently, in which case the manufacturer's specifications or recommendations shall be followed. The reference method shall be consistent with the method for manual sampling of sulfur dioxide specified in this section.

F. To aid the department in determining compliance with this section persons owning or operating coal burning equipment subject to this section shall, after July 1, 1977, submit quarterly reports to the department for the periods January 1 through March 31, April 1 through June 30, July 1 through September 30, and October 1 through December 31 of each year, each report to be received by the department within 45 days of the end of the quarterly period. The quarterly reports shall contain the following:

1. hourly averages of the concentrations of sulfur dioxide, expressed in parts per million, in the gases which are being emitted to the atmosphere, except for periods of instrument calibration and zero adjustments;

2. hourly averages of the per cent excess oxygen in the gases coming from the coal burning equipment;

3. rate of heat input (higher heating value) into the coal burning equipment determined at least once daily; and

4. per cent sulfur and heat content (higher heating value) of the coal utilized by the coal burning equipment determined at least once daily.

The department may, upon the request of the owner or operator, change the reporting requirements specified in this subsection.

"603. Coal Burning Equipment - Nitrogen Dioxide

A. No person owning or operating new coal burning equipment having a power generating capacity in excess of 25 megawatts or a heat input of greater than 250 million British Thermal Units per hour shall permit, cause, suffer or allow nitrogen dioxide emissions to the atmosphere in excess of .45 pounds per million British Thermal Units of heat input.

B. After December 31, 1974, no person owning or operating existing coal burning equipment having a power generating capacity in excess of 25 megawatts or a heat input of greater than 250 million British Thermal Units per hour shall permit, cause, suffer or allow nitrogen dioxide emissions to the atmosphere in excess of .7 pounds per million British Thermal Units of heat input.

C. As used in this regulation:

1. "new coal burning equipment" means coal burning equipment the construction of which is commenced after September 1, 1971;

2. "existing coal burning equipment" means coal burning equipment that was fully constructed and operational or under construction prior to September 1, 1971;

"604. Gas Burning Equipment - Nitrogen Dioxide

A. No person owning or operating new gas burning equipment having a heat input of greater than 1,000,000 million British Thermal Units per year per unit shall permit, cause, suffer or allow nitrogen dioxide emissions to the atmosphere in excess of .2 pounds per million British Thermal Units of heat input.

B. After December 31, 1974, no person owning or operating existing gas burning equipment having a heat input of greater than 1,000,000 million British Thermal Units per year per unit shall permit, cause, suffer or allow nitrogen dioxide emissions to the atmosphere in excess of .3 pounds per million British Thermal Units of heat input.

C. As used in this regulation

1. "new gas burning equipment" means gas burning equipment, the construction or modification of which is commenced after the publication of notice of hearing of this regulation as proposed.

2. "existing gas burning equipment" means gas burning equipment, the construction or modification of which is commenced prior to the publication of notice of hearing of this regulation as proposed."

NEW MEXICO

"605. Oil Burning Equipment - Sulfur Dioxide

No person owning or operating oil burning equipment having a heat input of greater than 1,000,000 million British Thermal Units per year per unit shall permit, cause, suffer or allow sulfur dioxide emissions to the atmosphere in excess of .34 pounds per million British Thermal Units of heat input."

"606. Oil Burning Equipment - Nitrogen Dioxide

No person owning or operating oil burning equipment having a heat input of greater than 1,000,000 million British Thermal Units per year per unit shall permit, cause, suffer or allow nitrogen dioxide emissions to the atmosphere in excess of .3 pounds per million British Thermal Units of heat input."

"621. NATURAL GAS PROCESSING PLANT—SULFUR.—

A. By January 1, 1976, no person owning or operating an existing natural gas processing plant that releases an average of ten tons a day or greater of sulfur in plant processes and that has an off-gas stream that undiluted contains greater than 20 mole percent hydrogen sulfide shall permit, cause, suffer or allow at any time sulfur emissions to the atmosphere in excess of 10 pounds of sulfur for every 100 pounds of sulfur released in plant processes.

B. By January 1, 1976, no person owning or operating an existing natural gas processing plant that releases an average of ten tons a day or greater of sulfur in plant processes and that has an off-gas stream that undiluted contains less than or equal to 20 mole percent hydrogen sulfide shall permit, cause, suffer or allow at any time sulfur emissions to the atmosphere in excess of 12 pounds of sulfur for every 100 pounds of sulfur released in plant processes.

C. By January 1, 1976, no person owning or operating an existing natural gas processing plant that sends residue gas containing greater than .25 grains hydrogen sulfide per 100 cubic feet of gas to a facility other than the natural gas processing plant for the purpose of residue gas purification shall permit, cause, suffer or allow sulfur emission to the atmosphere in excess of 10 pounds of sulfur for every 100 pounds of sulfur released in plant processes, unless the natural gas processing plant releases less than 2 1/2 tons a day of sulfur in plant processes.

D. By January 1, 1977, no person owning or operating an existing natural gas processing plant that releases an average of 7.5 or more tons a day but less than 10 tons a day of sulfur in plant processes and has an off-gas stream that undiluted contains greater than 20 mole percent hydrogen sulfide shall permit, cause, suffer or allow at any time sulfur emissions to the atmosphere in excess of 10 pounds of sulfur for every 100 pounds of sulfur released in plant processes.

E. By January 1, 1977, no person owning or operating an existing natural gas processing plant that releases an average of 7.5 or more tons a day but less than 10 tons a day of sulfur in plant processes and has an off-gas stream that undiluted contains less than or equal to 20 mole percent hydrogen sulfide shall permit, cause, suffer or allow sulfur emissions to the atmosphere in excess of 12 pounds of sulfur for every 100 pounds of sulfur released in plant processes.

F. By January 1, 1976, no person owning or operating an existing natural gas processing plant that is governed by a sulfur emission limitation of an Air Quality Control Regulation shall permit, cause, suffer or allow gas coming off any off-gas sweetening regeneration unit or other sulfur releasing unit to be sent to a facility other than the natural gas processing plant for the purpose of sulfur recovery or disposal:

1. unless all the gas coming off a gas sweetening regeneration unit or other sulfur releasing unit is sent to the facility other than the natural gas processing plant, except mercaptan gas, and the amount of sulfur in the off-gas stream from fuel burning equipment does not exceed the quantity of sulfur that would exist if the sulfur content of the gas used for fuel was 10 grains of sulfur per 100 standard cubic feet of fuel gas; or

2. unless only a portion of the gas coming off a gas sweetening regeneration unit or other sulfur releasing unit is sent to the facility other than the natural gas processing plant, and;

(a) if the natural gas processing plant releases an average of 7.5 tons a day or greater of sulfur in plant processes and has an off-gas stream that undiluted contains greater than 20 mole percent hydrogen sulfide, sulfur emissions from the existing natural gas processing plant do not exceed 10 pounds of sulfur for every 100 pounds of sulfur that are released in plant processes but not sent for sulfur recovery or disposal to another facility; or

(b) if the natural gas processing plant releases an average of 7.5 tons a day or greater of sulfur in plant processes and has an off-gas stream that undiluted contains less than or equal to 20 mole percent hydrogen sulfide, sulfur emissions from the existing natural gas processing plant do not exceed 12 pounds of sulfur for every 100 pounds of sulfur that are released in plant processes but not sent for sulfur recovery or disposal to another facility.

G. No person owning or operating a new natural gas processing plant that is governed by a sulfur emission limitation of an Air Quality Control Regulation shall permit, cause, suffer or allow gas coming off any off-gas sweetening regeneration unit or other sulfur releasing unit to be sent to a facility other than the natural gas processing plant for the purpose of sulfur recovery or disposal:

1. unless all the gas coming off the gas sweetening regeneration unit or other sulfur releasing unit is sent to the facilities other than the natural gas processing plant, except mercaptan gas, and the amount of sulfur in the off-gas stream from fuel burning equipment does not exceed the quantity of sulfur that would exist if the sulfur content of the gas used for fuel was 10 grains of sulfur per 100 standard cubic of fuel gas; or

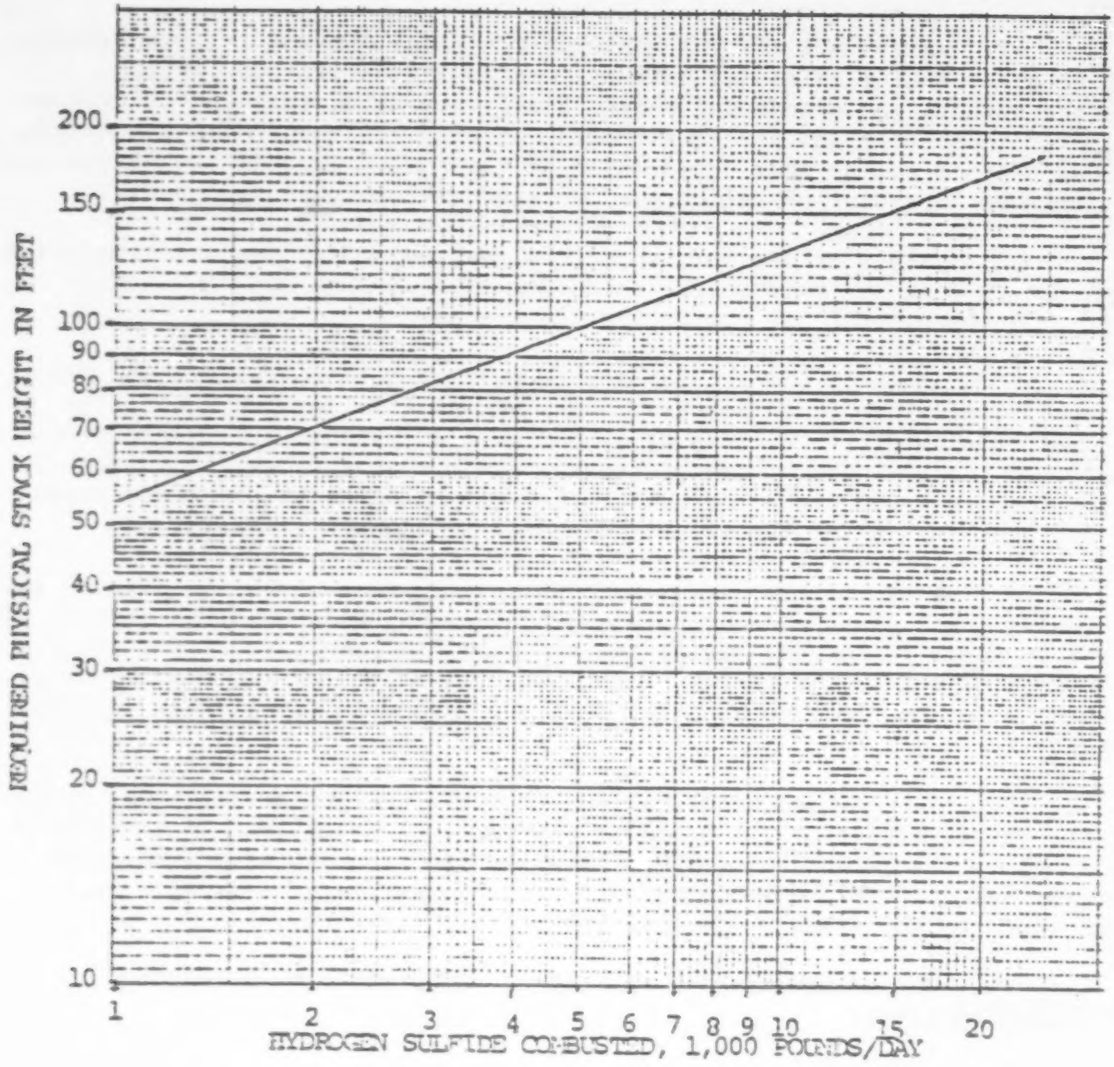
2. unless only a portion of the gas coming off the gas sweetening regeneration unit or other sulfur releasing unit is sent to the facility other than the natural gas processing plant, and:

(a) if the natural gas processing plant is a new natural gas processing plant that releases an average of five or more tons a day but less than twenty tons a day of sulfur in plant processes, sulfur emissions from the new natural gas processing plant do not exceed 10 pounds of sulfur for every 100 pounds of sulfur that are released in plant processes but not sent for sulfur recovery or disposal to another facility; or

(b) if the natural gas processing plant is a new natural gas processing plant that releases an average of twenty tons a day or greater of sulfur in plant processes, sulfur emissions from the new natural gas processing plant do not exceed 2 pounds of sulfur for every 100 pounds of sulfur in plant processes but not sent for sulfur recovery or disposal to another facility.

H. No person owning or operating a natural gas processing plant shall permit, cause, suffer or allow sulfur compounds to be emitted to the atmosphere unless the sulfur compound emission is from a stack of a sufficient physical height to prevent concentrations of sulfur compounds near ground level equal to any state or federal ambient air standard.

1. The necessary physical stack height shall be determined by the following graph:



2. If the natural gas processing plant is an existing natural gas processing plant, the requirements of this subsection shall not apply to that existing natural gas processing plant until January 1, 1977.

3. By January 1, 1977, any person owning or operating an existing natural gas processing plant must file with the department the following:

(a) the height of all stacks from which sulfur is emitted;

(b) the quantity of the sulfur emitted from each stack;

(c) the exit gas temperature for each stack;

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(d) the total mass flow rate of the stack effluent gases (for flares, the total effluent mass flow rate shall consist of the stack effluent mass flow rate plus that amount of air required for complete combustion); and

(e) any other information the department deems necessary to determine whether or not the physical height of any stack from which sulfur is emitted complies with the requirements of this subsection.

I. No person owning or operating a new natural gas processing plant that releases an average of five or more tons a day and less than twenty tons a day of sulfur in plant processes shall permit, cause, suffer or allow sulfur emissions to the atmosphere in excess of 10 pounds of sulfur for every 100 pounds of sulfur released in plant processes.

J. No person owning or operating a new natural gas processing plant that releases an average of 20 or more tons a day and less than 50 tons a day of sulfur in plant processes shall permit, cause, suffer or allow sulfur emissions to the atmosphere in excess of 4,000 pounds per day.

K. No person owning or operating a new natural gas processing plant that releases an average of 50 tons a day or greater of sulfur in plant processes shall permit, cause, suffer or allow sulfur emissions to the atmosphere in excess of 2 pounds of sulfur for every 100 pounds of sulfur released in plant processes.

L. To aid the department in determining compliance with this section, the owner or operator of a natural gas processing plant to which this section applies shall submit to the department quarterly reports in the months of January, April, July and October of each year containing the following information:

1. the sulfur content of feedstock entering the natural gas processing plant determined no less frequently than three times per week and no more frequently than once every twenty-four hours;

2. the sulfur content of all fuel burned in the plant and the amount of each type of fuel burned determined no less frequently than quarterly;

3. the sulfur content of the products produced by the natural gas processing plant determined no less frequently than weekly;

4. the sulfur content of the inlet and outlet gas stream or streams of the sulfur recovery plant determined no less frequently than quarterly; and

5. the weight of the recovered sulfur determined no less frequently than weekly.

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If it appears necessary, the department may require reports on a more frequent basis, but no more frequently than monthly.

The department may, upon the request of the owner or operator of a natural gas processing plant, alter the sampling periods specified in this subsection.

M. Subsections A, B, D, E, and L shall not apply to a natural gas processing plant that the department has certified as a "declining emission natural gas processing plant".

N. The department shall certify an existing natural gas processing plant as a "declining emission natural gas processing plant" and include in the certification a "sulfur release schedule" setting forth the maximum amounts of sulfur that may be released in plant processes in quarterly increments through January 1, 1980, if all of the following are met:

1. the sulfur released in plant processes in the plant will decrease to the extent that by January 1, 1980, less than 7.5 tons of sulfur per day will be released in plant processes;

2. the decrease in the amount of sulfur released in plant processes will be a continuous decrease due to reduction in the amount of sour feedstock into the plant;

3. the owner or operator of the plant has furnished a schedule to the department detailing the projected decreases in sour feedstock that will result in the continuous decrease of sulfur released in plant processes to less than 7.5 tons by 1980;

4. the owner or operator of the plant has stated its intention to follow the submitted schedule setting forth the projected decreases in sour feedstock to the plant;

5. the plant does not have a sulfur recovery plant;

6. the owner or operator of the plant has furnished to the department all of the information requested in Subsection N and has certified the accuracy and completeness of the information furnished;

7. the department has reviewed the application and all of the information submitted in support thereof, solicited and reviewed comments of the Oil Conservation Commission, and reviewed all comments received in writing from interested persons;

8. the department has determined, after considering the information specified in the above paragraphs and such other information as it may wish to consider, that the processing of sour feedstock by the plant will decrease according to the "sulfur release schedule" resulting in a continuous decrease of sulfur in plant processes to less than 7.5 tons per day by January 1, 1980.

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O. Application to the department for certification as a "declining emission natural gas processing plant" must be filed with the department no later than January 1, 1975, and contain the following:

1. the applicant's name and address;

2. date of the application;

3. description of the facility for which the certification is sought;

4. detailed description, including sulfur content, of the feedstock into the plant and its sources at the time of application, for the preceding two years and projected through 1985;

5. the amount of sulfur released in plant processes, specifying each process and the amount of sulfur released in each process at the time of application, for the preceding two years and projected through 1985;

6. the amount of sulfur leaving the plant at the time of application, for the preceding two years and projected through 1985;

7. such additional information as the department after conferring with the Oil Conservation Commission may require relating to reservoir data;

8. a "sulfur release schedule" setting forth the amounts of sulfur expected to be released in plant processes in quarterly increments through January 1, 1980; and

9. such additional information as the department may require.

P. The owner or operator of a natural gas processing plant that is certified as a "declining emission natural gas processing plant" may petition the department for a modification of the "sulfur release schedule". The department may grant the petition for modification of the "sulfur release schedule" if all of the requirements of Subsection N are met. The petition should explain in detail the reasons why the modification is necessary and include supporting data and such additional information as the department may require.

Q. The department shall notify the applicant or petitioner and all interested persons who submitted written comments of the department's action on the application for certification or petition for modification of the "sulfur release schedule" and the reasons therefor. The department shall notify

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the applicant or petitioner by certified mail. If the department denies certification or the petition for modification, the applicant or petitioner may appeal the decision of the department to the Environmental Improvement Board by filing a petition for review within thirty days of the date of denial. If the department grants the certification or the petition for modification, any interested person who submitted written comments opposing the certification or modification may appeal the decision of the department to the Environmental Improvement Board by filing a petition for review within thirty days of the date of the granting of certification or modification.

R. The owner or operator of a "declining emission natural gas processing plant" shall submit to the department quarterly reports for the periods January 1 through March 31, April 1 through June 30, July 1 through September 30, and October 1 through December 31 of each year, each report to be received by the department within 45 days of the end of the quarterly period.

1. The amount of gas received into the plant for the three month period including the average sulfur content of the gas determined no less frequently than three times per week and no more frequently than once every twenty-four hours and the total amount of sulfur received into plant processes in the three month period;

2. the sulfur content of all fuel burned in the plant and the amount of each type of fuel burned determined no less frequently than weekly;

3. the amount and sulfur content of the products produced by the plant determined no less frequently than weekly;

4. the amount of sulfur released in plant processes, specifying each process and the amount of sulfur released in each;

5. the quantity of sulfur disposed of and the method of disposal determined no less frequently than weekly;

6. such information as the department, after consulting with the Oil Conservation Commission, may require relating to new wells or re-worked wells from which the plant receives feedstock; and

7. such additional information as the department may require, including but not limited to new recovery techniques being used in the field.

If it appears necessary, the department may require reports on a more frequent basis, but no more frequently than monthly.

S. The owner or operator of a "declining emission natural gas processing plant" that has for any quarterly report period exceeded by more than one-thousand pounds the average daily amount of sulfur (averaged over the quarterly period) that was projected by the sulfur release schedule for that quarterly period shall submit to the department within 30 days after the filing of the quarterly report information as to why the projected average daily sulfur emission rate was exceeded.

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T. The department shall revoke any natural gas processing plant's certification as a "declining emission natural gas processing plant" if the natural gas processing plant exceeds by more than one thousand pounds for any two consecutive quarterly periods the amount of sulfur to be released in plant processes as set forth in the "sulfur release schedule" contained in the "declining emission natural gas processing plant" certification. The department shall notify the owner or operator of the natural gas processing plant by certified mail of the revocation of the plant's certification as a "declining emission natural gas processing plant".

U. The owner or operator of a natural gas processing plant whose certification as a "decreasing emission natural gas processing plant" has been revoked may appeal to the Environmental Improvement Board the department's determination that the "declining emission natural gas processing plant" exceeded by more than one thousand pounds for two consecutive quarterly periods the amount of sulfur to be released in plant processes as set forth in the "sulfur release schedule" contained in the "declining emission natural gas processing plant" certification. A petition for review of the department's determination must be filed with the board within twenty days of receipt of the certified notice of revocation.

"622. PETROLEUM REFINERY -- SULFUR.--

A. No person owning or operating an existing petroleum refinery shall permit, cause, suffer or allow total sulfur emissions to the atmosphere in excess of five tons in any 24 hour period.

B. No person owning or operating a new petroleum refinery that releases an average of more than five tons and less than thirty tons a day of sulfur in plant processes shall permit, cause, suffer or allow at any time sulfur emissions to the atmosphere in excess of 10 pounds of sulfur for every 100 pounds of sulfur released in plant processes.

C. No person onwing or operating a new petroleum refinery that releases an average of thirty tons a day or greater of sulfur in plant processes shall permit, cause, suffer or allow at any time sulfur emissions to the atmosphere in excess of 2 pounds of sulfur for every 100 pounds of sulfur released in plant processes.

D. No person owning or operating a new petroleum refinery shall permit, cause, suffer or allow at any time the amount of sulfur in the off-gas stream from fuel-gas burning equipment to exceed the quantity that would exist if the sulfur content of the gas used for fuel was 10 grains per 100 standard cubic feet of fuel gas.

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B. No person owning or operating an existing catalyst cracking recirculation or regeneration unit or tube carbon removal process operated in conjunction with a petroleum processing facility shall permit, cause, suffer or allow emissions during regeneration or cleaning to:

1. equal or exceed an opacity of 40% except for a period not to exceed five minutes during which the opacity is not to exceed 60%. The five minute period during which the opacity exceeds 40%, but may not exceed 60%, may not occur more frequently than three times per day; or

627. PETROLEUM PROCESSING FACILITIES--SULFUR RECOVERY PLANT--HYDROGEN SULFIDE (as amended on 11/21/74).--By January 1, 1976, no person owning or operating a petroleum processing facility or sulfur recovery plant, the feedstock of which is in whole or in part a product of petroleum processing shall permit, cause, suffer or allow hydrogen sulfide emissions to the atmosphere unless:

A. the stack emissions do not exceed 10 ppm by volume in the undiluted effluent gas stream or streams; or

B. the effluent gas stream containing hydrogen sulfide is passed through a device capable of oxidizing the hydrogen sulfide to sulfur dioxide.

631. HYDROCARBON STORAGE FACILITIES.--(As amended on November 21, 1974)

A. By January 1, 1976, no person shall place, hold or store hydrocarbons containing hydrogen sulfide in a container associated with a petroleum production facility or petroleum processing facility and having a capacity of twenty-thousand gallons or greater with a throughput of at least 30,000 gallons per week, unless the container is equipped with:

1. a method of discharging the hydrocarbons into the container below the liquid level; or

2. any other method or device equally effective to minimize hydrocarbon and hydrogen sulfide loss to the atmosphere.

B. By January 1, 1976, no person owning or operating, within the corporate limits of a municipality, a tank battery having a throughput greater than 10,000 barrels (420,000 gallons) per year operated in conjunction with a petroleum production facility, or a hydrocarbon storage facility operated in conjunction with a petroleum processing facility, shall place, store or hold in a stationary tank or other container any hydrocarbon liquids, the vapor of which contains at any time 24 ppm or more of hydrogen sulfide unless the tank or other container is equipped with:

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1. a well-maintained vapor recovery system consisting of:

(a) a vapor-gathering system capable of collecting the vapor and gases discharged; and

(b) a vapor disposal system capable of processing the vapor and gases so as to minimize emission of sulfur compounds to the atmosphere; or

2. any other device that is at least as efficient to minimize the loss of vapor or gas containing sulfur or its compounds to the atmosphere; or

3. a floating roof, consisting of an external floating roof, internal floating cover or covered floating roof, which is equipped with a closure seal or seals maintained in good repair to close the space between the roof or cover edge and tank wall, if the stationary tank or other container is equipped with a floating roof on January 1, 1974.

632. SULFUR RECOVERY PLANT--SULFUR.--

A. No person owning or operating an existing sulfur recovery plant shall permit, cause, suffer or allow at any time sulfur emissions to the atmosphere in excess of 12 pounds of sulfur for every 100 pounds of sulfur introduced into the plant.

B. No person owning or operating a new sulfur recovery plant that introduces less than twenty tons a day of sulfur into the plant shall permit, cause, suffer or allow at any time sulfur emissions to the atmosphere in excess of 10 pounds of sulfur for every 100 pounds of sulfur introduced into the plant.

C. No person owning or operating a new sulfur recovery plant that introduces twenty tons a day or greater of sulfur into the plant shall permit, cause, suffer or allow at any time sulfur emissions to the atmosphere in excess of 2 pounds of sulfur for every 100 pounds of sulfur introduced into the plant.

"651. Sulfuric Acid Plants - Sulfur

A. After December 31, 1972, no person owning or operating an existing sulfuric acid plant except those plants manufacturing sulfuric acid from H_2S gas, having an output capacity of 200 tons per day or less shall permit, cause, suffer or allow sulfur emissions to the atmosphere in excess for a 24 hour average of five pounds of sulfur for every one hundred pounds of sulfur introduced into the plant.

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B. After December 31, 1972, no person owning or operating an existing sulfuric acid plant manufacturing sulfuric acid from H_2S gas, having an output capacity of 200 tons per day or less shall permit, cause, suffer or allow sulfur emissions to the atmosphere in excess for a 24 hour average of seven pounds of sulfur for every one hundred pounds of sulfur introduced into the plant.

C. After December 31, 1972, no person owning or operating an existing sulfuric acid plant having an output capacity of greater than 200 tons per day shall permit, cause, suffer or allow sulfur emissions to the atmosphere in excess for a 24 hour average of three pounds of sulfur for every one hundred pounds of sulfur introduced into the plant.

D. No person owning or operating a new sulfuric acid plant shall permit, cause, suffer or allow sulfur emissions to the atmosphere in excess of two pounds of sulfur for every one hundred pounds of sulfur introduced into the plant.

"652. Non-ferrous Smelters - Sulfur

A. After December 31, 1974, no person owning or operating an existing non-ferrous smelter shall permit, cause, suffer or allow sulfur emissions to the atmosphere in excess of forty pounds of sulfur for every one hundred pounds of sulfur fed to the smelter.

B. After December 31, 1974, no person owning or operating a new non-ferrous smelter shall permit, cause, suffer or allow sulfur emissions to the atmosphere in excess of ten pounds of sulfur for every one hundred pounds of sulfur fed to the smelter.

"673. GASIFICATION PLANTS--HYDROGEN SULFIDE--CARBON DISULFIDE--CARBON OXYSULFIDE.--No person owning or operating a gasification plant shall permit, cause, suffer or allow any combination of hydrogen sulfide, carbon disulfide and carbon oxysulfide emissions to the atmosphere in excess of 100 ppm by volume in the effluent gas stream or streams. The hydrogen sulfide component in the combined effluent gas stream or streams is limited to 10 ppm by volume."

"679. GASIFICATION PLANTS--GAS-BURNING BOILERS--SULFUR DIOXIDE.--No person owning or operating gas-burning boilers in conjunction with a gasification plant shall permit, cause, suffer or allow sulfur dioxide emissions to the atmosphere in excess of a total of .16 pounds per million British Thermal Units of heat input (lower heating value) fed to all boilers."

NEW MEXICO

"680. GASIFICATION PLANTS--SULFUR.--

A. No person owning or operating a gasification plant shall permit, cause, suffer or allow sulfur emissions to the atmosphere in excess of a total of .008 pounds per million British Thermal Units of heat input (higher heating value) contained in the feed introduced into the gasification plant.

NEW YORK

PART 214

Section 214.3 Smoke emissions. After December 31, 1974, or such later date as determined by an order of the Commissioner, no person shall operate a by-product coke oven battery which emits a smoke equal to Ringlemann #1 or 20% opacity.

(b) Such person who operates a by-product coke oven battery shall be allowed an emission of smoke from the battery of greater than Ringlemann #1 or 20% opacity if such emission continues for a period or periods aggregating no more than three minutes of any consecutive 60 minute period.

Section 214.4 Sulfur compound emissions. After December 31, 1974 no person shall operate any by-product coke oven battery including auxiliary gas collecting and heating systems in such a manner as to emit, burn or flare process gas containing more than 50 grains of sulfur compounds (measured as hydrogen sulfide) per 100 standard cubic feet of gas.

PART 219

219.5 Smoke emissions. (a) No incinerator, built or installed after January 26, 1967, regardless of size, shall emit smoke of an opacity denser than 20 percent or No. 1 of the Ringelmann chart or equivalent, under normal operating conditions.

(b) No incinerator built or installed prior to January 26, 1967, regardless of size, shall be operated so as to emit smoke of an opacity denser than 40 percent or No. 2 of the Ringelmann chart or equivalent, under normal operating conditions.

PART 220

220.4 Opacity limits for existing Portland cement processes. (a) Except as provided in subdivision (b) of this section or in sections 220.5 or 220.6, no person shall cause or allow emission to the outdoor atmosphere of any material that has an opacity of 20 percent or greater for a period of three or more minutes during any continuous 60 minute period, from any apparatus, contrivance, machine, access road or dust dump which is used in or is appurtenant to the manufacture of portland cement, except uncombined water.

(b) Except as provided in section 220.6 after December 30, 1980, no person shall cause or allow emission to the outdoor atmosphere of any material that has an opacity of 10 percent or greater, except uncombined water, from a portland cement kiln or clinker cooler.

220.5 Opacity limits for new and modified Portland cement processes. Except as provided in section 220.6, no person shall cause or allow emission to the outdoor atmosphere of any material that has an opacity of 10 percent or greater for a

PART 224

Section 224.1 Nitric acid production. No person who owns an air contamination source used in producing nitric acid (30 to 70 percent in strength) for which a permit to construct is submitted subsequent to the effective date of this Part, shall cause or allow to be emitted to the outdoor atmosphere during any two hour period, nitrogen oxides (expressed as nitrogen dioxide) in excess of three pounds per ton of acid produced.

224.2 Sulfuric acid production. No person who owns an air contamination source used in producing sulfuric acid by the contact process involving burning elemental sulfur, alkylation acid, hydrogen sulfide, organic sulfides and mercaptans, or acid sludge for which a permit to construct is submitted subsequent to the effective date of this Part, shall cause or allow to be emitted to the outdoor atmosphere during any two hour period (a) sulfur dioxide in excess of four pounds per ton of acid produced, or (b) sulfuric acid mist (expressed as H_2SO_4) in excess of 0.15 pound per ton of acid produced.

224.3 Smoke or visible emissions. No person who owns an air contamination source used in producing nitric acid or sulfur acid for which a permit to construct is submitted subsequent to the effective date of this Part, shall cause or allow to be emitted to the outdoor atmosphere, smoke or visible emissions, except water, the shade or appearance of which is equal to or greater than 10 percent opacity for a period of three or more minutes during any continuous 60 minute period.

224.2 Sulfuric acid production. No person who owns an air contamination source used in producing sulfuric acid by the contact process involving burning elemental sulfur, alkylation acid, hydrogen sulfide, organic sulfides and mercaptans, or acid sludge for which a permit to construct is submitted subsequent to the effective date of this Part, shall cause or allow to be emitted to the outdoor atmosphere during any two hour period (a) sulfur dioxide in excess of four pounds per ton of acid produced, or (b) sulfuric acid mist (expressed as H_2SO_4) in excess of 0.15 pound per ton of acid produced.

Historical Note

Sec. added, filed Jan. 15, 1973 eff. 60 days after filing.

224.3 Smoke or visible emissions. No person who owns an air contamination source used in producing nitric acid or sulfur acid for which a permit to construct is submitted subsequent to the effective date of this Part, shall cause or allow to be emitted to the outdoor atmosphere, smoke or visible emissions, except water, the shade or appearance of which is equal to or greater than 10 percent opacity for a period of three or more minutes during any continuous 60 minute period.

Historical Note

Sec. added, filed Jan. 15, 1973 eff. 60 days after filing.

224.4 Stack monitoring. (a) Any person subject to the provisions of this Part shall install, maintain and operate at such process an instrument, approved by the commissioner, for continuously monitoring and recording those air contaminant emissions referred to in section 224.1 or section 224.2.

(b) Such person shall record production rate and hours of operation daily, and shall maintain a file of required measurements tabulated in a format acceptable to the commissioner.

(c) Such records of measurements shall be retained for a minimum of three years, and shall be furnished to the commissioner on his request.

(d) The instrument and sampling system installed and used pursuant to this section shall be capable of monitoring emission levels within ±20 percent with a confidence level of 95 percent and shall be calibrated in accordance with the method(s) prescribed by the manufacturer(s) of such instrument, the instrument shall be subjected to manufacturers' recommended zero adjustment and calibration procedures at least once per 24-hour operating period unless the manufacturer(s) specified or recommends calibration at shorter intervals, in which case such specifications or recommendations shall be followed.

Historical Note

Sec. added, filed Jan. 15, 1973 eff. 60 days after filing.

period of three or more minutes in any continuous 60 minute period, from any apparatus, contrivance or machine which is used in or is appurtenant to the manufacture of portland cement and for which a permit to construct was submitted, pursuant to 6 NYCRR Part 201, subsequent to the effective date of this Part, except uncombined water.

Historical Note

Sec. repealed, new filed June 29, 1961; renum. 383.5, Title 9, filed Sept., 1971; new filed Jan. 15, 1973 eff. 60 days after filing.

220.6 Start up and upset conditions. The commissioner may excuse a source owner from the provisions of sections 220.4 and 220.5 during startup or upset conditions that the source owner first notifies the commissioner of such start up or notifies the commissioner immediately thereafter of such upset condition.

Historical Note

Sec. repealed, new filed June 29, 1961; amd. filed May 23, 1969; renum. 383.6, Title 9, filed Sept., 1971; new filed Jan. 15, 1973 eff. 60 days after filing.

220.7 Monitoring of emissions and operations. (a) The owner of any portland cement kiln or clinker cooler shall maintain a file of daily production rates and kiln feed rates and any particulate emission measurements. The production and feed rates shall be summarized monthly. The records and summary shall be retained for at least three years following the date of such records and summaries and shall be made available for inspection by the commissioner during normal business hours.

(b) The owner of any portland cement kiln or clinker cooler subject to subdivision (b) of section 220.4 or section 220.5, shall install, maintain, calibrate daily and operate a device, approved by the commissioner, for continuously measuring and recording the opacity of emissions from such kiln or clinker cooler. Records of opacity shall be retained for at least three years following the date on which they are made.

Historical Note

Sec. repealed, new filed June 29, 1961; renum. 383.7, Title 9, filed Sept., 1971; new filed Jan. 15, 1973 eff. 60 days after filing.

220.8

Historical Note

Sec. repealed, new filed June 29, 1961; renum. 383.8, Title 9, filed Sept., 1971.

220.9

Historical Note

Sec. repealed, new filed June 29, 1961; amd. filed Oct. 27, 1961; renum. 383.9, Title 9, filed Sept., 1971.

220.10

Historical Note

Sec. repealed, new filed June 29, 1961; amd. filed Jan. 12, 1962; renum. 383.10, Title 9, filed Sept., 1971.

220.11

Historical Note

Sec. repealed, new filed June 29, 1961; renum. 383.11, Title 9, filed Sept., 1971.

220.12

Historical Note

Sec. added, filed June 29, 1961; amd. filed June 17, 1970; renum. 383.12, Title 9, filed Sept., 1971.

220.13

Historical Note

Sec. added, filed Nov. 12, 1968; repealed, new filed Dec. 16, 1970; renum. 383.13, Title 9, filed Sept., 1971.

220.14

Historical Note

Sec. added, filed May 23, 1969; renum. 383.14, Title 9, filed Sept., 1971.

(d) Upon written application by a source owner, the commissioner may except such person from the provisions of this section for a period not exceeding one year if the applicant can demonstrate to the satisfaction of the commissioner, by acceptable diffusion analysis or other acceptable method, that the emissions from his stationary combustion installation will not cause any air quality standard to be exceeded. Any exception granted by the commissioner shall include the conditions that the source shall not cause air pollution or contravention of any air quality standard. The commissioner may extend the exception provided the source owner has complied with all such conditions.

Historical Note

Sec. added, filed Apr. 28, 1972; amd. filed July 12, 1972; repealed, new added, filed Apr. 27, 1973 eff. 60 days after filing.

227.4 Smoke emissions. (a) No person shall operate a stationary combustion installation which emits smoke the shade or appearance of which is equal to or greater than:

(1) Number 2 on the Ringlemann Chart, or 40 percent opacity, for any time period or

(2) Number 1 on the Ringlemann Chart, or 20 percent opacity, for a period of three or more minutes during any continuous 60 minute period.

(b) Startup and emergency emissions in excess of those permitted by section 227.4(a) shall not be considered a violation if the source owner can demonstrate to the satisfaction of the commissioner that such excessive emissions were not preventable.

Historical Note

Sec. added, filed July 12, 1972; repealed, new added, filed Apr. 27, 1973 eff. 60 days after filing.

227.5 Nitrogen oxides. (a) No person shall cause or allow emissions of nitrogen oxides to the outdoor atmosphere from any stationary combustion installation of more than 250 million Btu per hour rated total heat input for which an application for a permit to construct was received by the department subsequent to August 11, 1972, which exceed:

(1) 0.70 pounds of nitrogen oxides (expressed as NO_2) per million Btu heat input when solid fuel is burned.

(2) 0.30 pounds of nitrogen oxides (expressed as NO_2) per million Btu heat input for when fuel oil is burned.

(3) 0.20 pounds of nitrogen oxides (expressed as NO_2) per million Btu heat input when gaseous fuel is burned.

(b) Gas turbines and stationary internal combustion engines shall be exempt from subdivision (a) of this section.

Historical Note

Sec. added, filed July 12, 1972; repealed, new added, filed Apr. 27, 1973 eff. 60 days after filing.

227.6 Stack monitoring. (a) Any person who owns a stationary combustion installation of more than 250 million Btu per hour rated total heat input shall install and operate in accordance with manufacturer's instructions, instruments, approved by the commissioner, for continuously monitoring and recording smoke from such installations at all times that the combustion installation is in service. Where gas is the only fuel burned, monitoring and recording of smoke is not required.

(b) After June 30, 1974, any person required to control nitrogen oxides in accordance with section 227.5 shall install and operate in accordance with manufacturer's instructions, instruments, approved by the commissioner, for continuously monitoring and recording nitrogen oxides from such installations at all times that the stationary combustion installation is in service.

(c) Any person required under this section to monitor stack emissions shall determine the average rate of each fuel burned daily and shall determine at least once per week, the gross heating value and ash content of each fuel burned. In the case of combustion installations producing electricity for sale, the average electrical output and the minimum and maximum hourly generation rate shall also be measured.

(d) Any person subject to the provisions of this section shall record and maintain a file of such measurements and operating data, as may be required by the commissioner, and shall tabulate and summarize such measurements and operating data in a format acceptable to the commissioner. Such person shall retain records and summaries for at least three years, and upon request of the commissioner shall furnish such records and summaries.

(e) If the sum of the rated total heat input of all furnaces, which are operated simultaneously and are connected to a common air cleaning device and/or a common stack exceeds 250 million Btu per hour total heat input, stack monitoring shall be required for such combustion installation in accordance with this section.

Historical Note

Sec. added, filed July 12, 1972; repealed, after filing.
new added, filed Apr. 27, 1973 eff. 60 days

227.7 **Fuel mixtures.** When two or more different fuels are burned simultaneously in a single furnace of a stationary combustion installation, the permissible emission rate for a contaminant shall be the sum of the permissible emission rates of the contaminant for each fuel multiplied by the heat input derived from such fuel.

Historical Note

Sec. added, filed July 12, 1972; repealed, after filing.
new added, filed Apr. 27, 1973 eff. 60 days

227.8 **Corrective action.** (a) Any person found to have violated any provision of this Part shall not cause, permit or allow operation of the stationary combustion installation involved in the violation unless

(1) it is equipped with approved emission control equipment, or
(2) it is rehabilitated or upgraded in an approved manner, or
(3) the fuel is changed to an acceptable type.

(b) The commissioner may seal such stationary combustion installation so as to prevent any operation if the conditions of paragraphs (1), (2), (3) of subdivision (a) of section 227.8 are not met within the time provided by the order of final determination issued in the case of the violation.

(c) No person shall cause, permit or allow operation of any stationary combustion installation sealed by the commissioner in accordance with this section.

(d) No person except the commissioner or his representatives shall remove, tamper with or destroy any seal affixed to any stationary combustion installation in accordance with this section.

Historical Note

Sec. added, filed July 12, 1972; repealed, after filing.
new added, filed Apr. 27, 1973 eff. 60 days

227.9 **General.** (a) *Emission data.* Any person who owns or operates a stationary combustion installation described in section 227.3 and 227.5 shall provide pertinent data concerning emissions, when so requested by the commissioner.

(b) *Test methods.* Sampling, compositing, and analysis of fuel samples shall be carried out in accordance with the most recent ASTM standard methods or equivalent methods acceptable to the commissioner.

Historical Note

Sec. added, filed July 12, 1972; repealed, after filing.
new added, filed Apr. 27, 1973 eff. 60 days

227.10

Sec. added, filed July 12, 1972; repealed,
filed Apr. 27, 1973 eff. 60 days after filing.

.0511

(d) All stacks serving kilns or dryers shall be equipped with air pollution control devices capable of collecting a minimum of 95 percent by weight of particulate matter and controlling the emission of sulfur dioxide to not more than 2.3 pounds per million BTU input.

.0516 SULFUR DIOXIDE EMISSIONS FROM FUEL BURNING INSTALLATIONS

No person shall cause, suffer, allow or permit sulfur dioxide caused by the combustion of a fuel or fuels to be discharged from any stack or chimney in excess of 2.3 pounds of sulfur dioxide per million BTU input, provided that sources subject to an emission standard for this pollutant in Regulation .0524 or .0525 of this Section shall meet that standard.

History Note: Statutory Authority G.S. 143-215.3(a)(1);
143-215.107(a)(5);
Eff. February 1, 1976;
Amended Eff. April 1, 1977.

.0517 EMISSIONS FROM PLANTS PRODUCING SULFURIC ACID

No person shall cause, suffer, allow, or permit the discharge of air contaminants resulting from the manufacture of sulfuric acid into the atmosphere except in compliance with the following:

(1) The emission of sulfur dioxide into the atmosphere must be limited to not more than 27 pounds for each ton of sulfuric acid produced;

(2) The emission of acid mist must be limited to not more than five-tenths of a pound per ton of sulfuric acid produced.

.0519 CONTROL OF NITROGEN DIOXIDE EMISSIONS

(a) No person shall cause or permit emissions of nitrogen dioxide from an oil or gas-fired boiler with a capacity of 250 million BTU per hour or more in excess of six-tenths of a pound per million BTU of heat input per hour.

(b) No person shall cause or permit emissions of nitrogen dioxide from a coal-fired boiler with a capacity of 250 million BTU or more in excess of one and three-tenths pounds per million BTU of heat input per hour.

(c) No person shall cause or permit the emission of nitrogen dioxide from nitric acid manufacturing plants in excess of five and eight-tenths pounds per ton of acid produced.

(d) No person shall cause or permit the emission of nitrogen dioxide from sulfuric acid manufacturing plants utilizing the chamber process in excess of five and eight-tenths pounds per ton of acid produced.

.0521 CONTROL OF VISIBLE EMISSIONS

(a) Purpose. The intent of this Regulation is to promulgate rules pertaining to the prevention, abatement, and control of emissions generated as a result of fuel burning operations and other industrial processes where an emission can be reasonably expected to occur, except during startups made in accordance with procedures approved by the commission.

(b) Scope. This Regulation shall apply to all fuel burning installations and such other processes as may cause a visible emission incident to the conduct of their operations, provided that sources subject to an emission standard for this pollutant in Regulation .0524 or .0525 of this Section shall meet that standard.

(c) Installations Existing as of July 1, 1971. No person shall cause, suffer, allow, or permit emissions from any installation which are:

(1) of a shade or density darker than that designated as No. 2 on the Ringelmann Chart for an aggregate of more than five minutes in any one hour or more than 20 minutes in any 24-hour period, or

(2) of greater than 40 percent opacity for an aggregate of more than five minutes in any one hour or more than 20 minutes in any 24-hour period.

(d) Installations Established After July 1, 1971. No person shall cause, suffer, allow, or permit emissions from any installation which are:

(1) of a shade or density darker than that designated as No. 1 on the Ringelmann Chart for an aggregate of more than five minutes in any one hour or more than 20 minutes in any 24-hour period, or

(2) of greater than 20 percent opacity for an aggregate of more than five minutes in any one hour or more than 20 minutes in any 24-hour period.

(e) Where the presence of uncombined water is the only reason for failure of an emission to meet the limitations of Subdivision (c) or (d) of this Regulation, those requirements shall not apply.

SECTION .0600 - AIR CONTAMINANTS; MONITORING, REPORTING

.0601 PURPOSE AND SCOPE

(a) The purpose of this Section is to set forth the requirements of the commission relating to monitoring air contaminant emissions and filing reports covering their discharge into the outdoor atmosphere of the state.

(b) This Section shall apply to all persons subject to the provisions of Section .0600 of Subchapter 2H of this Title.

History Note: Statutory Authority G.S. 143-215.3(a)(1);
143-215.68;
Eff. February 1, 1976;
Amended Eff. June 18, 1976.

.0602 DEFINITIONS

The following definitions of terms apply throughout this Section with the exception of Regulation .0603 in which the definitions contained in 40 CFR 60 shall apply:

(1) "CFR" means the "Code of Federal Regulations."

(2) "Fossil fuel-fired steam generator" means a furnace or boiler used in the process of burning fossil fuel for the primary purpose of producing steam by heat transfer.

(3) "Capacity factor" means the ratio of the average load on a machine or equipment for the period of time considered to the capacity rating of the machine or equipment.

(4) "Excess emissions" means emissions of an air pollutant in excess of an emission standard.

(5) "Emission standard" means a regulation (or portion thereof) setting forth an allowable rate of emissions, level of opacity, or prescribing equipment or fuel specifications that result in control of air pollution emissions.

(6) "Sulfuric acid plant" means any facility producing sulfuric acid by the contact process by burning elemental sulfur, alkylation acid, hydrogen sulfide, or acid sludge, but does not include facilities where conversion to sulfuric acid is utilized primarily as a means of preventing emissions to the atmosphere of sulfur dioxide or other sulfur compounds.

(7) "Nitric acid plant" means any facility producing nitric acid 30 to 70 percent in strength by either the pressure or atmospheric pressure process.

(8) "Distillate oils" are those liquid fractions of petroleum which are normally derived by vaporization and

condensation of petroleum remaining after gasoline and fractions more volatile than gasoline have been removed.

(9) "Residual oils" are those liquid or semi-liquid fractions of petroleum remaining after distillate oils and fractions more volatile than distillate oils have been removed.

History Note: Statutory Authority G.S. 143-215.3(a)(1);
143-215.68;
Eff. February 1, 1976;
Amended Eff. June 18, 1976.

.0603 SOURCES COVERED BY NEW SOURCE PERFORMANCE STANDARDS

Sources of the following types when subject to new source performance standards promulgated in 40 CFR 60 shall be monitored as required therein, and the excess emissions shall be reported as specified therein quarterly to the commission:

(1) fossil fuel-fired steam generators (40 CFR 60.1 to 60.49),
(2) nitric acid plants (40 CFR 60.1 to 60.39 and 60.70 to 60.79),
(3) sulfuric acid plants (40 CFR 60.1 to 60.39 and 60.80 to 60.89),
(4) petroleum refineries (40 CFR 60.1 to 60.39 and 60.100 to 60.109),
(5) primary copper smelters (40 CFR 60.1 to 60.39 and 60.160 to 60.169),
(6) primary zinc smelters (40 CFR 60.1 to 60.39 and 60.170 to 60.179),
(7) primary lead smelters (40 CFR 60.1 to 60.39 and 60.180 to 60.189).

History Note: Statutory Authority G.S. 143-215.3(a)(1);
143-215.68;
Eff. February 1, 1976;
Amended Eff. June 18, 1976.

.0604 SOURCES COVERED BY IMPLEMENTATION PLAN REQUIREMENTS

(a) Sources of the following types when included in Subdivision 1.1 of Appendix P of 40 CFR 51 concerning the preparation, adoption, and submittal of implementation plans but not including those sources covered by Regulation .0603 of this Section shall be monitored as described in Subdivision 2 and Subdivision 3, Paragraphs 3.1.1 to 3.1.5, where the performance specifications are those found in Appendix B of 40 CFR 60, and Paragraphs 3.2 to 3.8, of Appendix P of 40 CFR 51; and the excess emissions shall be reported quarterly to the commission in the manner described in Subdivision 4 and Subdivision 5, Paragraphs

5.1 to 5.3.3, of Appendix P of 40 CFR 51 except as otherwise provided in this Section:

(1) fossil fuel-fired steam generators,
(2) nitric acid plants,
(3) sulfuric acid plants,
(4) petroleum refineries.

The minimum requirements described in the referenced portions of Appendix P of 40 CFR 51 are hereby adopted as the requirements to be used under this Regulation. Wherever the language of the referenced portion of Appendix P of 40 CFR 51 speaks of the "state" or "state plan," the requirements described therein shall apply to those sources to which they pertain.

(b) A source which has purchased an emission monitoring system prior to September 11, 1974, is exempt from having to meet the test procedures described in 40 CFR 60 Appendix B for a period of five years following the approval by the Environmental Protection Agency of this Regulation as a part of the North Carolina State Implementation Plan, provided that such system was approved under the then regulation number 8 which was recodified as Section .0600 of Subchapter 2D of Title 15 of the North Carolina Administrative Code, effective February 1, 1976. A monitoring scheme which uses significant manual operations, for example, a periodic grab sampling and analysis scheme, is not considered to be an emission monitoring system as described in this Subdivision.

(c) When effluents from two or more affected facilities of similar design and operating characteristics are combined before being released to the atmosphere, the monitoring system may be installed on the combined effluent.

(d) A six-minute time period shall be deemed appropriate as an alternative opacity averaging time period as described in Subdivision 4.2 of Appendix P of 40 CFR 51.

(e) Data reporting or reduction procedures varying from those prescribed by this Regulation may be used if the owner or operator of a source shows to the satisfaction of the Director, Division of Environmental Management, that the alternate procedures are at least as accurate as those in the Regulation.

(f) Alternative monitoring and reporting requirements may be approved, on a case-by-case basis, by the Director, Division of Environmental Management, through the following procedure:

(1) The owner or operator of a source may apply in writing to the director for approval of alternative monitoring and reporting requirements. The application shall include:

(A) the basis or reason that alternative monitoring and reporting requirements are more desirable than those prescribed by this Regulation,

(B) a proposal of alternative monitoring and reporting requirements,

(C) any other information that the source owner or operator feels would be helpful to the director in his evaluation of the application.

(2) Examples of situations where alternative monitoring and reporting requirements may be approved include, but are not limited to, the following:

(A) when installation of a continuous monitoring system or device prescribed by this Regulation would not provide accurate determinations of emissions;

(B) when the affected facility is operated on less than 30 days per year;

(C) when effluents from two or more facilities of significantly different design and operating characteristics are combined before release to the atmosphere or when the effluent is released to the atmosphere through more than one point;

(D) when the director determines that the requirements prescribed by this Regulation would impose an extreme economic burden on the source owner or operator; The determination of an extreme economic burden shall be made on the basis of whether meeting the requirements prescribed by this Regulation would produce serious hardship without equal or greater benefit to the public;

(E) when the monitoring systems prescribed by this Regulation cannot be installed due to physical limitations at the facility; The determination of such limitations shall be made on the basis of whether meeting the requirements prescribed by this Regulation would necessitate significant reconstruction of the facility.

(3) The director may require the submission of additional information as he deems appropriate to evaluate the application.

(4) Upon making a determination that the source should be subject to alternative monitoring and reporting requirements, the director may approve either the proposed alternative monitoring and reporting requirements or any other monitoring and reporting requirements that he deems appropriate and feasible.

History Note: Statutory Authority G.S. 143-215.3(a)(1);
143-215.68;
Eff. February 1, 1976;

Amended Eff. June 18, 1976.

.0605 WOOD AND WOOD-FOSSIL FUEL COMBINATION UNITS

(a) There shall be installed, calibrated, maintained, and operated a photoelectric or other type visible emissions detector and recorder on any stack discharging the flue gases from one or more steam generator units when the heat input from wood fuels (or when the sum of the heat inputs from wood fuels and liquid or solid fossil fuels for generators not covered by Regulation .0603 or .0604 of this Section) to any individual steam generator unit discharging to said stack exceeds 250 million BTU per hour and the annual average capacity factor is greater than 30 percent as demonstrated to the state by the owner or operator.

(b) The visible emissions detector instrumentation shall be subject to the manufacturer's recommended zero adjustment and calibration procedures.

(c) The record of such measurements shall be summarized showing the date and duration of any violations of the requirements of applicable visible emission regulations and submitted to the Environmental Management Commission at quarterly intervals. The recorder charts from which the summary is prepared shall be retained for at least one year and made available for inspection by personnel of the division of environmental management.

History Note: Statutory Authority G.S. 143-215.3(a)(1);
143-215.68;
Eff. February 1, 1976;
Amended Eff. June 18, 1976.

.0606 OTHER COAL OR RESIDUAL OIL BURNERS

(a) Provisions shall be made for determining sulfur dioxide emissions into the ambient air by all sources which burn coal or residual oil and which are not required to monitor for sulfur dioxide emissions by Regulation .0603 or .0604 of this Section when the sum of the heat inputs from coal and residual oil to any individual unit exceeds 250 million BTU per hour and the unit has an annual average capacity factor of greater than 30 percent, as reported to the Federal Power Commission for calendar year 1974, or as otherwise demonstrated to the state by the owner or operator.

(b) Such determinations may be made by an instrument for continuously monitoring and recording sulfur dioxide emissions or in the case of fuel burning installations by analyses of representative samples of fuels to determine BTU value and percent sulfur content or by such other procedures as may be approved by the Director, Division of Environmental Management, or his delegate.

(c) The continuous monitoring of sulfur dioxide emissions and the determination of the sulfur content of fuels shall be conducted in accordance with procedures approved by the Director, Division of Environmental Management, or his delegate.

(d) The data to be reported quarterly to the commission shall include:

(1) in the case of fuel analysis, the quantity and type of fuels burned, the BTU value, the sulfur content in percent by weight, and the total calculated sulfur dioxide emissions in those cases where these emissions are excess emissions;

(2) in the case of continuous monitoring of emissions, the emission rate expressed in the same units as the applicable standard, the maximum instantaneous rate, and the total sulfur dioxide emissions in those cases where these emissions are excess emissions. Recorder charts from continuous monitoring instruments shall be retained for at least one year and made available for inspection by personnel of the division of environmental management.

History Note: Statutory Authority G.S. 143-215.3(a)(1);
143-215.68;
Eff. February 1, 1976;
Amended Eff. December 1, 1976; June 18, 1976.

.0607 EXCEPTIONS TO MONITORING AND REPORTING REQUIREMENTS

(a) The following exceptions apply to Regulations .0604 to .0606 of this Section:

(1) A source not subject to an emission standard of Section .0500 of this Subchapter shall not be required to be monitored or reported under this Section.

(2) A source scheduled for retirement by October 6, 1980, shall not be required to be monitored or reported under this Section, provided that adequate evidence and guarantees are provided that clearly show that the source will cease operations prior to such date.

(3) Monitoring and reporting during a period of monitoring system malfunction shall not be required under this Section, provided that the source owner or operator shows, to the satisfaction of the Director, Division of Environmental Management, that the malfunction was unavoidable and is being repaired as expeditiously as practicable.

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(4) Proof of continuous monitoring system performance shall be provided on request of the Director, Division of Environmental Management, when system repairs or adjustments have been made.

(b) Sources otherwise required to be monitored and reported under Regulation .0605 or .0606 of this Section shall not be required to be monitored or reported under this Section if the source is operated on less than 30 days per year.

History Note: Statutory Authority G.S. 143-215.3(a)(1);
143-215.68;
Eff. February 1, 1976;
Amended Eff. June 18, 1976.

.0608 PROGRAM SCHEDULE

(a) All persons required to report emissions by Regulations .0603, .0604, .0605 or .0606 of this Section shall have in operation a monitoring program for each affected source on and after the day 18 months following approval by the Environmental Protection Agency of this Regulation as a part of the North Carolina State Implementation Program except that reasonable extensions of this period may be granted as described in 40 CFR 51.19(e)(5) and Subdivision 1.3 of Appendix P of 40 CFR 51.

(b) All persons required to report emissions by Regulation .0605 or .0606 of this Section shall, by October 16, 1976, (November 1, 1973, for affected facilities which were required to be monitored under the then regulation number 8 which was recodified as Section .0600 of Subchapter 2D of Title 15 of the North Carolina Administrative Code, effective February 1, 1976) submit to the division of environmental management for review and approval a program for complying with such requirements. Such a program shall include a statement concerning the qualifications of the personnel who will be doing the sampling and sample analysis, the date by which the first report will be submitted, and a description of the procedures and equipment for sampling and sample analysis.

History Note: Statutory Authority G.S. 143-215.3(a)(1);
143-215.68;
Eff. June 18, 1976.

.0609 MONITORING CONDITION IN PERMIT

Reference to the obligations of the approved monitoring program shall be included as a condition of the permit issued for the source. In the case of permits outstanding, this reference shall be included upon renewal of the permit.

History Note: Statutory Authority G.S. 143-215.3(a)(1);
143-215.68;
Eff. June 18, 1976.

.0610 DELEGATION

The director is authorized to exercise all functions necessary to administer this Regulation and to delegate any or all such functions, except that he shall not delegate below the level of regional engineers, division of environmental management.

History Note: Statutory Authority G.S. 143-215.3(a)(1);
143-215.3(a)(4);
Eff. June 18, 1976.

.0524 NEW SOURCE PERFORMANCE STANDARDS

(a) Sources of the following types when subject to new source performance standards promulgated in 40 CFR 60 (CFR refers to "Code of Federal Regulations") shall comply with the emission standards, monitoring and reporting requirements, maintenance requirements, notification and record keeping requirements, performance test requirements, test method and procedure provisions, and any other provisions, as required therein, rather than with any otherwise-applicable regulation in this Section which would be in conflict therewith:

(1) fossil fuel-fired steam generators (40 CFR 60.1 to 60.49);
(2) incinerators (40 CFR 60.1 to 60.39 and 60.50 to 60.59);
(3) portland cement plants (40 CFR 60.1 to 60.39 and 60.60 to 60.69);
(4) nitric acid plants (40 CFR 60.1 to 60.39 and 60.70 to 60.79);
(5) sulfuric acid plants (40 CFR 60.1 to 60.39 and 60.80 to 60.89);
(6) asphalt concrete plants (40 CFR 60.1 to 60.39 and 60.90 to 60.99);
(7) petroleum refineries (40 CFR 60.1 to 60.39 and 60.100 to 60.109);
(8) storage vessels for petroleum liquids (40 CFR 60.1 to 60.39 and 60.110 to 60.119);
(9) secondary lead smelters (40 CFR 60.1 to 60.39 and 60.120 to 60.129);
(10) secondary brass and bronze ingot production plants (40 CFR 60.1 to 60.39 and 60.130 to 60.139);
(11) iron and steel plants (40 CFR 60.1 to 60.39 and 60.140 to 60.149);
(12) sewage treatment plants (40 CFR 60.1 to 60.39 and

60.150 to 60.159);

(13) phosphate fertilizer industry: wet process phosphoric acid plants (40 CFR 60.1 to 60.39 and 60.200 to 60.209);

(14) phosphate fertilizer industry: superphosphoric acid plants (40 CFR 60.1 to 60.39 and 60.210 to 60.219);

(15) phosphate fertilizer industry: diammonium phosphate plants (40 CFR 60.1 to 60.39 and 60.220 to 60.229);

(16) phosphate fertilizer industry: triple superphosphate plants (40 CFR 60.1 to 60.39 and 60.230 to 60.239);

(17) phosphate fertilizer industry: granular triple superphosphate storage facilities (40 CFR 60.1 to 60.39 and 60.240 to 60.249);

(18) steel industry: electric arc furnaces (40 CFR 60.1 to 60.39 and 60.270 to 60.279);

(19) coal preparation plants (40 CFR 60.1 to 60.39 and 60.250 to 60.259);

(20) primary copper smelters (40 CFR 60.1 to 60.39 and 60.160 to 60.169);

(21) primary zinc smelters (40 CFR 60.1 to 60.39 and 60.170 to 60.179);

(22) primary lead smelters (40 CFR 60.1 to 60.39 and 60.180 to 60.189);

(23) primary aluminum reduction plants (40 CFR 60.1 to 60.39 and 60.190 to 60.199).

(b) All requests, reports, applications, submittals, and other communications to the administrator required under Subdivision (a) of this Regulation shall be submitted to the Environmental Management Commission rather than to the Environmental Protection Agency.

(c) In the application of this Regulation, definitions contained in 40 CFR 60 shall apply rather than those of Section .0100 of this Subchapter when conflict exists.

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R23-25-03 RESTRICTION OF EMISSION OF VISIBLE AIR CONTAMINANTS

3.100 RESTRICTIONS APPLICABLE TO EXISTING INSTALLATIONS

No person shall discharge into the ambient air from any single source of emission whatsoever, with the exception of existing incinerators, any air contaminant

3.110 of a shade or density equal to or darker than that designated as No. 2 on the Ringelmann Chart, or equivalent standard approved by the Department; or

3.120 of such opacity as to obscure an observer's view to a degree equal to or greater than that described in 3.110.

3.200 RESTRICTIONS APPLICABLE TO NEW INSTALLATIONS AND ALL INCINERATORS

No person shall discharge into the ambient air from any single source of emission whatsoever any air contaminant

3.210 of a shade or density equal to or darker than that designated as No. 1 on the Ringelmann Chart, or equivalent standard approved by the Department; or

3.220 of such opacity as to obscure an observer's view to a degree equal to or greater than that described in 3.210.

3.300 EXCEPTIONS

3.310 A person may discharge into the ambient air from any single source of emission for a period or periods aggregating not more than four minutes in any 60 minutes air contaminants

3.311 of a shade or density not darker than No. 3 on the Ringelmann Chart, or equivalent standard approved by the Department; or

3.312 of such opacity as to obscure an observer's view to a degree not greater than that described in 3.311.

3.400 METHOD OF MEASUREMENT

The Ringelmann Chart published and described in the U.S. Bureau of Mines Information Circular 8333 or the U.S. Public Health Service Smoke Inspection Guide as described in the Federal Register, Title 42, Chapter 1, Subchapter F, Part 75, shall be used in grading the shade or opacity of visible air contaminant emissions. The Department may specify other means of measurement which give comparable results or results of greater accuracy. The two publications, or replacements, described in this subsection are hereby made a part of these regulations by reference.

6.120 RESTRICTIONS APPLICABLE TO FUEL BURNING INSTALLATIONS

No person shall cause or permit the emission of sulfur dioxide to the ambient air from any fuel burning installation in an amount greater than 3.0 pounds of sulfur dioxide per million BTU's of heat input to the installation.

6.220 CONCENTRATION OF SULFUR COMPOUNDS IN EMISSIONS RESTRICTED

The Department may establish emission limitations on the amount of sulfur dioxide, sulfur trioxide, and sulfuric acid which may be emitted into the ambient air from any source specified in 6.210 in any area, if it is determined that such source is causing the Ambient Air Quality Standards to be exceeded.

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6.300 METHODS OF MEASUREMENT

6.310 SULFUR OXIDES

The method of measuring sulfur oxides in stack gases shall be the Shell Development Company method as published in "Atmospheric Emissions from Sulfuric Acid Manufacturing Processes." Public Health Service Publication 999-AP-13 (1965), Appendix B, pp. 85-87. This publication or its replacement is made part of these regulations by reference.

6.320 SULFUR TRIOXIDE AND SULFURIC ACID

The method of measuring sulfur trioxide, sulfuric acid, or any combination thereof in stack gases shall be the modified Monsanto Company method as published in "Atmospheric Emissions from Sulfuric Acid Manufacturing Processes", Public Health Service Publication 999-AP-13 (1965), Appendix B, pp. 61-66. This publication or its replacement is made part of these regulations by reference.

6.330 OTHER TEST METHODS MAY BE USED

Other test methods approved by the Department may be used.

12.111 Monitoring Requirements

(1) Unless otherwise approved by the Department or specified in applicable subsections, the requirements of this subsection shall apply to all continuous monitoring systems required under applicable subsections.

(2) All continuous monitoring systems and monitoring devices shall be installed and operational prior to conducting performance tests under subsection 12.107. Verification of operational status shall, as a minimum, consist of the following:

- (a) For continuous monitoring systems referenced in division (3)(a) of this subsection, completion of the conditioning period specified by applicable requirements in Appendix B.
- (b) For continuous monitoring systems referenced in division (3)(b) of this subsection, completion of seven days of operation.
- (c) For monitoring devices referenced in applicable subsections, completion of the manufacturer's written requirements or recommendations for checking the operation or calibration of the device.

(3) During any performance tests required under subsection 12.107 or within 30 days thereafter and at such other times as may be required by the Department, the owner or operator of any affected facility shall conduct continuous monitoring system performance evaluations and furnish the Department within 60 days thereof two or, upon request, more copies of a written report of the results of such tests. These continuous monitoring system performance evaluations shall be conducted in accordance with the following specifications and procedures:

- (a) Continuous monitoring systems listed within this subdivision except as provided in division (3)(b) of this subsection shall be evaluated in accordance with the requirements and procedures contained in the applicable performance specification of Appendix B as follows:
  - (i) Continuous monitoring systems for measuring opacity of emissions shall comply with Performance Specification 1.
  - (ii) Continuous monitoring systems for measuring nitrogen oxides emissions shall comply with Performance Specification 2.

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(iii) Continuous monitoring systems for measuring, sulfur dioxide emissions shall comply with Performance Specification 2.

(iv) Continuous monitoring systems for measuring the oxygen content or carbon dioxide content of effluent gases shall comply with Performance Specification 3.

(b) An owner or operator who, prior to September 11, 1974, entered into a binding contractual obligation to purchase specific continuous monitoring system components except as referenced by division (3)(b)(iii) of this subsection shall comply with the following requirements:

(i) Continuous monitoring systems for measuring opacity of emissions shall be capable of measuring emission levels within ±20 percent with a confidence level of 95 percent. The Calibration Error Test and associated calculation procedures set forth in Performance Specification 1 of Appendix B shall be used for demonstrating compliance with this specification.

(ii) Continuous monitoring systems for measurement of nitrogen oxides or sulfur dioxide shall be capable of measuring emission levels within ±20 percent with a confidence level of 95 percent. The Calibration Error Test, the Field Test for Accuracy (Relative), and associated operating and calculation procedures set forth in Performance Specification 2 of Appendix B shall be used for demonstrating compliance with this specification.

(iii) Owners or operators of all continuous monitoring systems installed on an affected facility prior to the effective date of this regulation are not required to conduct tests under divisions (3)(b)(i) and/or (ii) of this subsection unless requested by the Department.

(c) All continuous monitoring systems referenced by division (3)(b) of this subsection shall be upgraded or replaced (if necessary) with new continuous monitoring systems, and such improved systems shall be demonstrated to comply with applicable performance specifications under division (3)(a) of this subsection by September 11, 1979.

(4) Owners or operators of all continuous monitoring systems installed in accordance with the provisions of this regulation shall check the zero and span drift at least once daily in accordance with the method prescribed by the manufacturer of such systems unless the manufacturer recommends adjustments at shorter intervals, in which case such recommendations shall be followed. The zero and span shall, as a minimum, be adjusted whenever the 24-hour zero drift or 24-hour calibration draft limits of the applicable performance specifications in Appendix B are exceeded. For continuous monitoring systems measuring opacity of emissions, the optical surfaces exposed to the effluent gases shall be cleaned prior to performing the zero or span drift adjustments except that for systems using automatic zero adjustments, the optical surfaces shall be cleaned when the cumulative automatic zero compensation exceeds four percent opacity. Unless otherwise approved by the Department, the following procedures, as applicable, shall be followed:

12.111(4)

(a) For extractive continuous monitoring systems measuring gases, minimum procedures shall include introducing applicable zero and span gas mixtures into the measurement system as near the probe as is practical. Span and zero gases certified by their manufacturer to be traceable to National Bureau of Standards reference gases shall be used whenever these reference gases are available. The span and zero gas mixtures shall be the same composition as specified in Appendix B of this regulation. Every six months from date of manufacture, span and zero gases shall be reanalyzed by conducting triplicate analyses with Reference Methods 6 for SO_2, 7 for NO_x, and 3 for O_2 and CO_2, respectively. The gases may be analyzed at less frequent intervals if longer shelf lives are guaranteed by the manufacturer.

(b) For non-extractive continuous monitoring systems measuring gases, minimum procedures shall include upscale check(s) using a certified calibration gas cell or test cell which is functionally equivalent to a known gas concentration. The zero check may be performed by computing the zero value from upscale measurements or by mechanically producing a zero condition.

(c) For continuous monitoring systems measuring opacity of emissions, minimum procedures shall include a method for producing a simulated zero opacity condition and an upscale (span) opacity condition using a certified neutral density filter or other related technique to produce a known obscuration of the light beam. Such procedures shall provide a system check of the analyzer internal optical surfaces and all electronic circuitry including the lamp and photodetector assembly.

(5) Except for system breakdowns, repairs, calibration checks, and zero and span adjustments required under division (4) of this subsection, all continuous monitoring systems shall be in continuous operation and shall meet minimum frequency of operation requirements as follows:

(a) All continuous monitoring systems referenced by division (3)(a) and (b) of this subsection for measuring opacity of emissions shall complete a minimum of one cycle of operation (sampling, analyzing, and data recording) for each successive 10-second period.

(b) All continuous monitoring systems referenced by division (3)(a) of this subsection for measuring oxides of nitrogen, sulfur dioxide, carbon dioxide, or oxygen shall complete a minimum of one cycle of operation (sampling, analyzing, and data recording) for each successive 15-minute period.

(c) All continuous monitoring systems referenced by division (3)(b) of this subsection, except opacity, shall complete a minimum of one cycle of operation (sampling, analyzing, and data recording) for each successive one-hour period.

(6) All continuous monitoring systems or monitoring devices shall be installed such that representative measurements of emissions or process parameters from the affected facility are obtained. Additional procedures for location of continuous monitoring systems contained in the applicable Performance Specifications of Appendix B of this regulation shall be used.

(7) When the effluents from a single affected facility or two or more affected facilities subject to the same emission standards are combined before being released to the atmosphere, the owner or operator may install applicable continuous monitoring systems on each effluent or on the combined effluent. When the affected facilities are not subject to the same emission standards, separate continuous monitoring systems shall be installed on each effluent. When the effluent from one affected facility is released to the atmosphere through more than one point, the owner or operator shall install applicable continuous monitoring systems on each separate effluent unless the installation of fewer systems is approved by the Department.

(8) Owners or operators of all continuous monitoring systems for measurement of opacity shall reduce all data to six-minute averages and for systems other than opacity to one-hour averages for time periods under subsections 12.102(22) and (16), respectively. Six-minute opacity averages shall be calculated from 24 or more data points equally spaced over each six-minute period. For systems other than opacity, one-hour averages shall be computed from four or more data points equally spaced over each one-hour period. Data recorded during periods of system breakdowns, repairs, calibration checks, and zero and span adjustments shall not be included in the data averages computed under this division. An arithmetic or integrated average of all data may be used. The data output of all continuous monitoring systems may be recorded in reduced or nonreduced form (e.g. ppm pollutant and percent O_2 or lb/million BTU of pollutant). All excess emissions shall be converted into units of the standard using the applicable conversion procedures specified in subsections. After conversion into units of the standard, the data may be rounded to the same number of significant digits used in subsections to specify the applicable standard (e.g. rounded to the nearest one percent opacity).

(a) Upon written application by an owner or operator, the Department may approve alternatives to any monitoring procedures or requirements of this regulation including, but not limited to the following:

(i) Alternative monitoring requirements when installation of a continuous monitoring system or monitoring device specified by this regulation would not provide accurate measurements due to liquid water or other interferences caused by substances with the effluent gases.

(ii) Alternative monitoring requirements when the affected facility is infrequently operated.

(iii) Alternative monitoring requirements to accommodate continuous monitoring systems that require additional measurements to correct for stack moisture conditions.

(iv) Alternative locations for installing continuous monitoring systems or monitoring devices when the owner or operator can demonstrate that installation at alternate locations will enable accurate and representative measurements.

(v) Alternative methods of converting pollutant concentration measurements to units of the standards.

(vi) Alternative procedures for performing daily checks of zero and span drift that do not involve use of span gases or test cells.

(vii) Alternatives to the A.S.T.M. test methods or sampling procedures specified by any subsection.

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(viii) Alternative continuous monitoring systems that do not meet the design or performance requirements in Performance Specification 1, Appendix B, but adequately demonstrate a definite and consistent relationship between its measurements and the measurements of opacity by a system complying with the requirements in Performance Specification 1. The Department may require that such demonstration be performed for each affected facility.

(ix) Alternative monitoring requirements when the effluent from a single affected facility or the combined effluent from two or more affected facilities are released to the atmosphere through more than one point.

12.401

Standards of Performance for Fossil-Fuel Steam Generators

(1) Applicability and Designation of Affected Facility

The provisions of this subsection are applicable to each fossil fuel-fired steam generating unit of more than 63 million kcal per hour heat input (250 million Btu per hour), which is the affected facility.

(2) Definitions

As used in this subsection, all terms not defined herein shall have the meaning given them in the Act, and in subsection 12.102 of this regulation.

(a) "Fossil fuel-fired steam generating unit" means furnace or boiler used in the process of burning fossil fuel for the purpose of producing steam by heat transfer.

(3) Standard for Particulate Matter

(a) On and after the date on which the performance test required to be conducted by subsection 12.107 is completed, no owner or operator subject to the provisions of this subsection shall cause to be discharged into the atmosphere from any affected facility any gases which:

(i) Contain particulate matter in excess of 0.18 g per million cal heat input (0.10 lb per million Btu) derived from fossil fuel.

(ii) Exhibit greater than 20 percent opacity except that a maximum of 40 percent opacity shall be permissible for not more than 2 minutes in any hour.

(4) Standard for Sulfur Dioxide

(a) On and after the date on which the performance test required to be conducted by subsection 12.107 is completed, no owner or operator subject to the provisions of this subsection shall cause to be discharged into the atmosphere from any affected facility any gases which contain sulfur dioxide in excess of:

(i) 1.4 g per million cal heat input (0.80 lb per million Btu) derived from liquid fossil fuel.

(ii) 2.2 g per million cal heat input (1.2 lb per million Btu) derived from solid fossil fuel.

(b) When different fossil fuels are burned simultaneously in any combination, the applicable standard shall be determined by proration using the following formula:

$$\frac{y(1.4) + z(2.2)}{y+z}$$

where:

y is the percentage of total heat input derived from liquid fossil fuel, and

z is the percentage of total heat input derived from solid fossil fuel.

(c) Compliance shall be based on the total heat input from all fossil fuels burned, including gaseous fuels.

(5) Standard for Nitrogen Oxides

(a) On and after the date on which the performance test required to be conducted by subsection 12.107 is completed, no owner or operator subject to the provisions of this subsection shall cause to be discharged into the atmosphere from any affected facility any gases which contain nitrogen oxides, expressed as NO_2 in excess of:

(i) 0.36 g per million cal heat input (0.20 lb per million Btu) derived from gaseous fossil fuel.

(ii) 0.54 g per million cal heat input (0.30 lb per million Btu) derived from liquid fossil fuel.

(iii) 1.26 g per million cal heat input (0.70 lg per million Btu) derived from solid fossil fuel (except lignite).

(b) When different fossil fuels are burned simultaneously in any combination, the applicable standard shall be determined by proration. Compliance shall be determined by using the following formula:

$$\frac{x(0.36) + y(0.54) + z(1.26)}{x + y + z}$$

where:

x is the percentage of total heat input derived from gaseous fossil fuel,

y is the percentage of total heat input derived from liquid fossil fuel, and

z is the percentage of total heat input derived from solid fossil fuel (except lignite).

(6) Emission and Fuel Monitoring

(a) A continuous monitoring system for measuring the opacity of emissions, except where gaseous fuel is the only fuel burned, shall be installed, calibrated, maintained, and operated by the owner or operator. The continuous monitoring system shall be spanned at 80 or 90 or 100 percent opacity.

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(b) A continuous monitoring system for measuring sulfur dioxide emissions, shall be installed, calibrated, maintained and operated by the owner or operator except where gaseous fuel is the only fuel burned or where low sulfur fuels are used to achieve compliance with the standard under subsection 12.401(4) and fuel analyses under subdivision (b)(ii) of this division are conducted. The following procedures shall be used for monitoring sulfur dioxide emissions:

(i) For affected facilities which use continuous monitoring systems, Reference Method 6 shall be used for conducting monitoring system performance evaluations under subsection 12.111(3). The pollutant gas used to prepare calibration gas mixtures under paragraph 2.1, Performance Specification 2 and for calibration checks under subsection 12.111(4) to this regulation, shall be sulfur dioxide (SO_2). The span value for the continuous monitoring system shall be determined as follows:

((a)) For affected facilities firing liquid fossil fuel the span value shall be 1000 ppm sulfur dioxide.

((b)) For affected facilities firing solid fossil fuel the span value shall be 1500 ppm sulfur dioxide.

((c)) For affected facilities firing fossil fuels in any combination, the span value shall be determined by computation in accordance with the following formula and rounding to the nearest 500 ppm sulfur dioxide:

$$1000y + 1500z$$

where:

y = the fraction of total heat input derived from liquid fossil fuel, and

z = the fraction of total heat input derived from solid fossil fuel.

((d)) For affected facilities which fire both fossil fuels and non-fossil fuels, the span value shall be subject to the Department's approval.

(ii) Reserved)

(iii) For affected facilities using flue gas desulfurization systems to achieve compliance with sulfur dioxide standards under subsection 12.401(4), the continuous monitoring system for measuring sulfur dioxide emissions shall be located downstream of the desulfurization system and in accordance with requirements in Performance Specification 2 of Appendix B and the following:

((a)) Owners or operators shall install CO_2 continuous monitoring systems, if selected under subdivision (d) of this division, at a location upstream of the desulfurization system. This option may be used only if the owner or operator can demonstrate that air is not added to the flue gas between the CO_2 continuous monitoring system and each system measures the CO_2 and SO_2 on a dry basis.

((b)) Owners or operators who install O_2 continuous monitoring systems under subdivision (d) of this division shall select a location downstream of the desulfurization system and all measurements shall be made on a dry basis.

((c)) If fuel of a different type than is used in the boiler is fired directly into the flue gas for any purpose (e.g. reheating) the F or Fc factors used shall be prorated under subdivision (f)(vi) of this division with consideration given to the fraction of total heat input supplied by the additional fuel. The pollutant, opacity, CO_2, or O_2 continuous monitoring system(s) shall be installed downstream of any location at which fuel is fired directly into the flue gas.

(c) A continuous monitoring system for the measurement of nitrogen oxides emissions shall be installed, calibrated, maintained, and operated by the owner or operator except for any affected facility demonstrated during performance tests under subsection 12.107 to emit nitrogen oxides pollutants at levels 30 percent or more below applicable standards under subsection 12.401(5) of this regulation. The following procedures shall be used for determining the span and for calibrating nitrogen oxides continuous monitoring systems:

(i) The span value shall be determined as follows:

((a)) For affected facilities firing gaseous fossil fuel the span value shall be 500 ppm nitrogen oxides.

((b)) For affected facilities firing liquid fossil fuel the span value shall be 500 ppm nitrogen oxides.

((c)) For affected facilities firing solid fossil fuel the span value shall be 1000 ppm nitrogen oxides.

((d)) For affected facilities firing fossil fuels in any combination, the span value shall be determined by computation in accordance with the following formula and rounding to the nearest 500 ppm nitrogen oxides:

$$500(x + y) + 1000z$$

where:

x = the fraction of total heat input derived from gaseous fossil fuel,

y = the fraction of total heat input derived from liquid fossil fuel, and

z = the fraction of total heat input derived from solid fossil fuel.

((e)) For affected facilities which fire both fossil fuels and non-fossil fuels, the span value shall be subject to the Department's approval.

(ii) The pollutant gas used to prepare calibration gas mixtures under paragraph 2.1, Performance Specification 2 and for calibration checks under subsection 12.111(4) to this regulation, shall be nitric oxide (NO). Reference Method 7 shall be used for conducting monitoring system performance evaluations under subsection 12.111(3).

(d) A continuous monitoring system for measuring either oxygen or carbon dioxide in the flue gases shall be installed, calibrated, maintained, and operated by the owner or operator.

(e) An owner or operator required to install continuous monitoring systems under subdivisions (b) and (c) of this division shall for each pollutant monitored use the applicable conversion procedure for the purpose of converting continuous monitoring data into units of the applicable standards (g/million cal, lb/million Btu) as follows:

(i) When the owner or operator elects under subdivision (d) of this division to measure oxygen in the flue gases, the measurement of the pollutant concentration and oxygen concentration shall each be on a dry basis and the following conversion procedure shall be used:

$$E = CF\left(\frac{20.9}{20.9-\%O_2}\right)$$

where:

E, C, F and $\%O_2$, are determined under subdivision (f) of this division.

(ii) When the owner or operator elects under subdivision (d) of this division to measure carbon dioxide in the flue gases, the measurement of the pollutant concentration and the carbon dioxide concentration shall be on a consistent basis (wet or dry) and the following conversion procedure shall be used:

$$E = CF_c\left(\frac{100}{\%CO_2}\right)$$

where:

E, C, Fc, and $\%CO_2$ are determined under subdivision (f) of this division.

(f) The values used in the equations under subdivision (e)(i) and (ii) of this division are derived as follows:

(i) E = pollutant emission, g/million cal(lb/million Btu).

(ii) C = pollutant concentration, g/dscm (lb/dscf), determined by multiplying the average concentration (ppm) for each one-hour period by 4.15×10^{-5} M g/dscm per ppm (2.59×10^{-9} M lb/dscf per ppm) where M = pollutant molecular weight, g/g-mole (lb/lb-mole). M = 64.07 for sulfur dioxide and 46.01 for nitrogen oxides.

(iii) $\%O_2$, $\%CO_2$ = oxygen or carbon dioxide volume (expressed as percent), determined with equipment specified under subdivision (d) of this division.

(iv) F, Fc = a factor representing a ratio of of the volume of dry flue gases generated to the calorific value of the fuel combusted (F) and a factor representing a ratio of the volume of carbon dioxide generated to the calorific value of the fuel combusted (Fc), respectively. Values of F and Fc are given as follows:

((a)) For anthracite coal as classified according to A.S.T.M. D388-66, F = 1.139 dscm/million cal (10140 dscf/million Btu) and Fc = 0.222 scm CO_2/million cal (1980 scf CO_2/million Btu).

((b)) For sub-bituminous and bituminous coal as classified according to ASTM D388-66, F = 1.103 dscm/million cal (9820 dscf/million Btu) and Fc = 0.203 scm CO_2/million cal (1810 scf CO_2/million Btu).

((c)) For liquid fossil fuels including crude, residual, and distillate oils, F = 1.036 dscm/million cal (9220 dscf/million Btu) and Fc = 0.161 scm CO_2/million cal (1430 scf CO_2/million Btu).

((d)) For gaseous fossil fuels, F = 0.982 dscm/million cal (8740 dscf/million Btu). For natural gas, propane, and butane fuels, Fc = 0.117 scm CO_2/million cal (1040 scf CO_2/million Btu) for natural gas, 0.135 scm CO_2/million Btu) for propane, and 0.142 scm CO_2/million cal (1260 scf CO_2/million Btu) for butane.

(v) The owner or operator may use the following equation to determine an F factor (dscm/million cal, or dscf/million Btu) on a dry basis (if it is desired to calculate F on a wet basis, consult with the Department) or F_c factor (scm CO_2/million cal, or scf CO_2/million Btu) on either basis in lieu of the F or Fc factors specified in subdivision (f)(iv) of this division:

$$F=\frac{(227.0\%H + 95.7\%C + 35.4\%S + 8.6\%N \quad 28.5\%O)}{GCV} \quad \text{(metric units)}$$

$$F=10^6\frac{(3.64\%H + 1.53\%C + 0.57\%S + 0.14\%N \quad 0.46\%O)}{GCV} \quad \text{(English Units)}$$

$$F_c=\frac{20.0\%C}{GCV} \quad \text{(metric units)}$$

$$F_c=\frac{321 \times 10^3\%C}{GCV} \quad \text{(English units)}$$

((a)) H,C,S,N, and O are content by weight of hydrogen, carbon, sulfur, nitrogen, and oxygen (expressed as percent), respectively, as determined on the same basis as GCV by ultimate analysis of the fuel fired, using A.S.T.M. method D3178-74 or D3176 (solid fuels), or computed from results using

A.S.T.M. methods D1137-53(70), D1945-64(73), or D1946-67(72) (gaseous fuels) as applicable.

((b)) GCV is the gross calorific value (cal/g, Btu/lb) of the fuel combusted, determined by the A.S.T.M. test methods D2015-66(72) for solid fuels and D1826-64(70) for gaseous fuels as applicable.

(vi) For affected facilities firing combinations of fossil fuels, the F or Fc factors determined by subdivision (f)(iv) or (v) of this division shall be prorated in accordance with the applicable formula as follows:

((a)) $F = xF_1 + yF_2 + zF_3$

where:

x, y, z = the fraction of total heat input derived from gaseous, liquid, and solid fuel, respectively.

F_1, F_2, F_3 = the value of F for gaseous, liquid, and solid fossil fuels respectively under subdivision (f)(iv) or (v) of this division.

((b)) $F_c = \sum_{i=1}^{n} X_i (F_c)_i$

where:

X_i = the fraction of total heat input derived from each type fuel (e.g., natural gas, butane, crude, bituminous coal, etc.).

$(F_c)_i$ = the applicable Fc factor for each fuel type determined in accordance with subdivision (f)(iv) and (v) of this division.

((c)) For affected facilities which fire both fossil fuels and non-fossil fuels, the F or Fc value shall be subject to the Department's approval.

(g) For the purpose of reports required under subsection 12.106(3), periods of excess emissions that shall be reported are defined as follows:

(i) (Reserved)

(ii) Sulfur dioxide. Excess emissions for affected facilities are defined as:

((a)) Any three-hour period during which the average emissions (arithmetic average of three contiguous one-hour periods) of sulfur dioxide as measured by a continuous monitoring system exceed the applicable standard under subsection 12.401(4).

((b)) (Reserved)

(iii) Nitrogen oxides. Excess emissions for affected facilities using a continuous monitoring system for measuring nitrogen oxides are defined as any three-hour period during which the average emissions (arithmetic average of three contiguous one-hour periods) exceed the applicable standards under subsection 12.401(5).

(7) Test Methods and Procedures

(a) The reference methods in Appendix A of this regulation, except as provided in subsection 12.107 (2), shall be used to determine compliance with the standards as prescribed in subsections 12.401(3), 12.401(4) and 12.401(5) as follows:

(i) Method 1 for selection of sampling site and sample traverses.

(ii) Method 3 for gas analysis to be used when applying Reference Methods 5, 6 and 7.

(iii) Method 5 for concentration of particulate matter and the associated moisture content.

(iv) Method 6 for concentration of SO_2 and

(v) Method 7 for concentration of NO_x.

(b) For Method 5, Method 1 shall be used to select the sampling site and the number of traverse sampling points. The sampling time for each run shall be at least 60 minutes and the minimum sampling volume shall be 0.85 dscm (30 dscf) except that smaller sampling times or volumes, when necessitated by process variables or other factors, may be approved by the Department. The probe and filter holder heating systems in the sampling train shall be set to provide a gas temperature no greater than 160°C (320°F).

(c) For Methods 6 and 7, the sampling site shall be the same as that selected for Method 5. The sampling point in the duct shall be at the centroid of the cross section or at a point no closer to the walls than 1 m(3.28 ft). For Method 6, the sample shall be extracted at a rate proportional to the gas velocity at the sampling point.

(d) For Method 6, the minimum sampling time shall be 20 minutes and the minimum sampling volume 0.02 dscm (0.71 dscf) for each sample. The arithmetic mean of two samples shall constitute one run. Samples shall be taken at approximately 30-minute intervals.

(e) For Method 7, each run shall consist of at least four grab samples taken at approximately 15-minute intervals. The arithmetic mean of the samples shall constitute the run value.

(f) For each run using the methods specified by subdivisions (a)(iii), (iv), and (v) of this division, the emissions expressed in g/million cal (lb/million Btu) shall be determined by the following procedures:

$$E=CF\left(\frac{20.9}{20.9-\%O_2}\right)$$

where:

(i) E = pollutant emission g/million cal (lb/million Btu).

(ii) C = pollutant concentration, g/dscm (lb/dscf), determined by Methods 5, 6, or 7.

(iii) $\%O_2$ = oxygen content by volume (expressed as percent), dry basis. Percent oxygen shall be determined by using the integrated or grab sampling and analysis procedures of Method 3 as applicable. The sample shall be obtained as follows:

((a)) For determination of sulfur dioxide and nitrogen oxides emissions, the oxygen sample shall be obtained simultaneously at the same point in the duct as used to obtain the samples for Methods 6 and 7 determinations, respectively subsection 12.401(7)(c). For Method 7, the oxygen sample shall be obtained using the grab sampling and analysis procedures of Method 3.

((b)) For determination of particulate emissions, the oxygen sample shall be obtained simultaneously by traversing the duct at the same sampling location used for each run of Method 5 under subdivision (b) of this division. Method 1 shall be used for selection of the number of traverse points except that no more than 12 sample points are required.

(iv) F=a factor as determined in subdivision (f)(iv), (v) or (vi) of subsection 12.401(6).

(g) When combinations of fossil fuels are fired, the heat input, expressed in cal/hr (Btu/hr), shall be determined during each testing period by multiplying the gross calorific value of each fuel fired by the rate of each fuel burned. Gross calorific value shall be determined in accordance with A.S.T.M. methods D2015-66(72) (solid fuels), D240-64(73) (liquid fuels), or D1826-64 (70) (gaseous fuels) as applicable. The rate of fuels burned during each testing period shall be determined by suitable methods and shall be confirmed by a material balance over the steam generation system.

(3) Standard for Particulate Matter

(a) On and after the date on which the performance test required to be conducted by subsection 12.107 is completed, no owner or operator subject to the provisions of this subsection shall cause to be discharged into the atmosphere from any kiln any gases which:

(i) Contain particulate matter in excess of 0.15 kg per metric ton of feed (dry basis) to the kiln (0.30 lb per ton).

(ii) Exhibit greater than 10 percent opacity.

(b) On and after the date on which the performance test required to be conducted by subsection 12.107 is completed, no owner or operator subject to the provisions of this subsection shall cause to be discharged into the atmosphere from any clinker cooler any gases which:

(i) Contain particulate matter in excess of 0.050 kg per metric ton of feed (dry basis) to the kiln (0.10 lb per ton).

(ii) Exhibit 10 percent opacity, or greater.

(c) On and after the date on which the performance test required to be conducted by subsection 12.107 is completed, no owner or operator subject to the provisions of this subsection shall cause to be discharged into the atmosphere from any affected facility, other than the kiln and clinker cooler, any gases which exhibit 10 percent opacity or greater.

12.404 Standards of Performance for Nitric Acid Plants

(1) Applicability and Designation of Affected Facility

The provisions of this subsection are applicable to each nitric acid production unit, which is the affected facility.

(3) Standard for Nitrogen Oxides

(a) On and after the date on which the performance test required to be conducted by subsection 12.107 is completed, no owner or operator subject to the provisions of this subsection shall cause to be discharged into the atmosphere from any affected facility any gases which:

(i) Contain nitrogen oxides, expressed as NO_2, in excess of 1.5 kg per metric ton of acid produced (3.0 lb per ton), the production being expressed as 100 percent nitric acid.

(ii) Exhibit 10 percent opacity, or greater.

(4) Emission Monitoring

(a) A continuous monitoring system for the measurement of nitrogen oxides shall be installed, calibrated, maintained, and operated by the owner or operator. The pollutant gas used to prepare calibration gas mixtures under paragraph 2.1, Performance Specification 2 and for calibration checks under subsection 12.111 (4) to this regulation, shall be nitrogen dioxide (NO_2). The span shall be set at 500 ppm of nitrogen dioxide. Reference Method 7 shall be used for conducting monitoring system performance evaluations under 12.111(3).

(b) The owner or operator shall establish a conversion factor for the purpose of converting monitoring data into units of the applicable standard (kg/metric ton, lb/short ton). The conversion factor shall be established by measuring emissions with the continuous monitoring system concurrent with measuring emissions with the applicable reference method tests. Using only that portion of the continuous monitoring emission data that represents emission measurements concurrent with the reference method test periods, the conversion factor shall be determined by dividing the reference method test data averages by the monitoring data averages to obtain a ratio expressed in units of the applicable standard to units of the monitoring data, i.e., kg/metric ton per ppm (lb/short ton per ppm). The conversion factor shall be re-established during any performance test under subsection 12.107 or any continuous monitoring system performance evaluation under subsection 12.111(3).

(c) The owner or operator shall record the daily production rate and hour of operation.

(d) (Reserved)

(e) For the purpose of reports required under subsection 12.106(3), periods of excess emissions that shall be reported are defined as any three-hour period during which the average nitrogen oxides emissions (arithmetic average of three contiguous one-hour periods) as measured by a continuous monitoring system exceed the standard under subsection 12.404 (3)(a).

(5) Test Methods and Procedures

(a) The reference methods in Appendix A to this regulation, except as provided for in subsection 12.107(2), shall be used to determine compliance with the standard prescribed in division (3) of this subsection as follows:

(i) Method 7 for the concentration of NO_x;

(ii) Method 1 for sample and velocity traverses;

(iii) Method 2 for velocity and volumetric flow rate; and

(iv) Method 3 for gas analysis.

(b) For Method 7, the sample site shall be selected according to Method 1 and the sampling point shall be the centroid of the stack or duct or at a point no closer to the walls than 1 m (3.28 ft). Each run shall consist of at least four grab samples taken at approximately 15-minute intervals. The arithmetic mean of the samples shall constitute the run value. A velocity traverse shall be performed once per run.

(c) Acid production rate, expressed in metric tons per hour of 100 percent nitric acid, shall be determined during each testing period by suitable methods and shall be confirmed by a material balance over the production system.

(d) For each run, nitrogen oxides, expressed in g/metric ton of 100 percent nitric acid, shall be determined by dividing the emission rate in g/hr by the acid production rate. The emission rate shall be determined by the equation,

$$g/hr=Q_s xc$$

where:

Q_s=volumetric flow rate of the effluent in dscm/hr, as determined in accordance with subdivision (a)(iii) of this division and c=NO_x concentration in g/dscm, as determined in accordance with subdivision (a)(i) of this division.

2.405 Standards of Performance for Sulfuric Acid Plants

(1) Applicability and Designation of Affected Facility

The provisions of this subsection are applicable to each sulfuric acid production unit, which is the affected facility.

(3) Standard for Sulfur Dioxide

(a) On and after the date on which the performance test required to be conducted by subsection 12.107 is completed, no owner or operator subject to the provisions of this subsection shall cause to be discharged into the atmosphere from any affected facility any gases which contain sulfur dioxide in excess of 2 kg per metric ton of acid produced (4 lb per ton), the production being expressed as 100 percent H_2SO_4.

(4) Standard for Acid Mist

(a) On and after the date on which the performance test required to be conducted by subsection 12.107 is completed, no owner or operator subject to the provisions of this subsection shall cause to be discharged into the atmosphere from any affected facility any gases which:

(i) Contain acid mist, expressed as H_2SO_4, in excess of 0.075 kg per metric ton of acid produced (0.15 lb per ton), the production being expressed as 100 percent H_2SO_4.

(ii) Exhibit 10 percent opacity, or greater.

(5) Emission Monitoring

(a) A continuous monitoring system for the measurement of sulfur dioxide shall be installed, calibrated, maintained, and operated by the owner or operator. The pollutant gas used to prepare calibration gas mixtures under paragraph 2.1, Performance Specification 2 and for calibration checks under subsection 12.111 (4) to this regulation, shall be sulfur dioxide (SO_2). Reference Method 8 shall be used for conducting monitoring system performance evaluations under subsection 12.111(3) except that only the sulfur dioxide portion of the Method 8 results shall be used. The span shall be set at 1000 ppm of sulfur dioxide.

(b) The owner or operator shall establish a conversion factor for the purpose of converting monitoring data into units of the applicable standard (kg/metric ton, lb/short ton). The conversion factor shall be determined, as a minimum, three times daily by measuring the converter using suitable methods (e.g., the Reich test, National Air Pollution Control Administration Publication No. 999-AP-13 and calculating the appropriate conversion factor for each eight-hour period as follows:

$$CF = k\left(\frac{1.000 - 0.015r}{r - s}\right)$$

where:

CF = conversion factor (kg/metric ton per ppm, lb/short ton per ppm).

k = Constant derived from material balance. For determining CF in metric units, k = 0.0653. For determining CF in English units, k = 0.1306.

r = percentage of sulfur dioxide by volume entering the gas converter. Appropriate corrections must be made for air injection plants subject to the Department's approval.

s = percentage of sulfur dioxide by volume in the emissions to the atmosphere determined by the continuous monitoring system required under subdivision (a) of this division.

(c) The owner or operator shall record all conversion factors and values under subdivision (b) of this division from which they were computed (i.e., CF, r, and s).

(d) [Reserved]

(e) For the purpose of reports under subsection 12.106(3), periods of excess emissions shall be all three-hour periods (or the arithmetic average of three consecutive one-hour periods) during which the integrated average sulfur dioxide emissions exceed the applicable standards under subsection 12.405(3).

(6) Test Methods and Procedures

(a) The reference methods in Appendix A to this regulation, except as provided for in subsection 12.107(2), shall be used to determine compliance with the standards prescribed in divisions (3) and (4) of this subsection as follows:

(i) Method 8 for the concentrations of SO_2 and acid mist;

(ii) Method 1 for sample and velocity traverses;

(iii) Method 2 for velocity and volumetric flow rate; and

(iv) Method 3 for gas analysis.

(b) The moisture content can be considered to be zero For Method 8 the sampling time for each run shall be at least 60 minutes and the minimum sample volume shall be 1.15 dscm (40.6 dscf) except that smaller sampling times or sample volumes, when necessitated by process variables or other factors, may be approved by the Department.

(c) Acid production rate, expressed in metric tons per hour of 100 percent H_2SO_4, shall be determined during each testing period by suitable methods and shall be confirmed by a material balance over the production system.

(d) Acid mist and sulfur dioxide emissions, expressed in g/metric ton of 100 percent H_2SO_4, shall be determined by dividing the emission rate in g/hr by the acid production rate. The emission rate shall be determined by the equation, $g/hr=Q_s x c$, where Q_s=volumetric flow rate of the effluent in dscm/hr as determined in accordance with subdivision (a)(iii) of this division and c=acid mist and SO_2 concentrations in g/dscm as determined in accordance with subdivision (a)(i) of this division.

12.406 Standards of Performance for Asphalt Concrete Plants

(1) Applicability and Designation of Affected Facility

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The affected facility to which the provisions of this subsection apply is each asphalt concrete plant. For the purpose of this subsection, an asphalt concrete plant is comprised only of any combination of the following: Dryers; systems for screening, handling, storing, and weighing hot aggregate; systems for loading, transferring, and storing mineral filler; systems for mixing asphalt concrete; and the loading, transfer, and storage systems associated with emission control systems.

(3) Standard for Particulate Matter

(a) On and after the date on which the performance test required to be conducted by subsection 12.107 is completed, no owner or operator subject to the provisions of this subsection shall discharge or cause the discharge into the atmosphere from any affected facility any gases which:

(i) Contain particulate matter in excess of 90 mg/dscm (0.04 gr/dscf).

(ii) Exhibit 20 percent opacity, or greater.

12.407 Standards of Performance for Petroleum Refineries

(1) Applicability and Designation of Affected Facility

The provisions of this subsection are applicable to the following affected facilities in petroleum refineries: Fluid catalytic cracking unit catalyst regenerators, fluid catalytic cracking unit incinerator-waste heat boilers, and fuel gas combustion devices.

(3) Standard for Particulate Matter

(a) On and after the date on which the performance test required to be conducted by subsection 12.107 is completed, no owner or operator subject to the provisions of this subsection shall discharge or cause the discharge into the atmosphere from any fluid catalytic cracking unit catalyst regenerator or from any fluid catalytic cracking unit incinerator-waste heat boiler:

(i) Particulate matter in excess of 1.0 kg/1000 kg (1.0 lb/1000 lb) of coke burn-off in the catalyst regenerator.

(ii) Gases exhibiting 30 percent opacity or greater, except for 3 minutes in any 1 hour.

(b) In those instances in which auxiliary liquid or solid fossil fuels are burned in the fluid catalytic cracking unit incinerator-waste heat boiler, particulate matter in excess of that permitted by subdivision (a)(i) of this division may be emitted to the atmosphere, except that the incremental rate of particulate emissions shall not exceed 0.18 g/million cal (0.10 lb/million Btu) of heat input attributable to such liquid or solid fuel.

(5) Standard for Sulfur Dioxide

(a) On and after the date on which the performance test required to be conducted by subsection 12.107 is completed, no owner or operator subject to the provisions of this subsection shall burn in any fuel gas combustion device any fuel gas which contains H_2S in excess of 230 mg/dscm (0.10 gr/dscf), except as provided in subdivision (b) of this division. The combustion of process upset gas in a flare, or the combustion in a flare of process gas or fuel gas which is released to the flare as a result of relief valve leakage, is exempt from this subdivision.

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(b) The owner or operator may elect to treat the gases resulting from the combustion of fuel gas in a manner which limits the release of SO_2 to the atmosphere if it is shown to the satisfaction of the Department that this prevents SO_2 emissions as effectively as compliance with the requirements of subdivision (a) of this division.

(6) Emission Monitoring

(a) Continuous monitoring systems shall be installed, calibrated, maintained, and operated by the owner or operator as follows:

(i) A continuous monitoring system for the measurement of the opacity of emissions discharged into the atmosphere from the fluid catalytic cracking unit catalyst regenerator. The continuous monitoring system shall be spanned at 60, 70, or 80 percent opacity.

(ii) (Reserved)

(iii) A continuous monitoring system for the measurement of sulfur dioxide in the gases discharged into the atmosphere from the combustion of fuel gases (except where a continuous monitoring system for the measurement of hydrogen sulfide is installed under subdivision (a)(iv) of this division. The pollutant gas used to prepare calibration gas mixtures under paragraph 2.1, Performance Specification 2 and for calibration checks under subsection 12.111(4) to this regulation, shall be sulfur dioxide (SO_2). The span shall be set at 100 ppm. For conducting monitoring system performance evaluations under subsection 12.111(3), Reference Method 6 shall be used.

(iv) (Reserved)

(b) (Reserved)

(c) The average coke burn-off rate (thousands of kilogram/hr) and hours of operation for any fluid catalytic cracking unit catalyst regenerator subject to divisions (3) and (4) of this subsection shall be recorded daily.

(d) For any fluid catalytic cracking unit catalyst regenerator which is subject to division (3) of this subsection and which utilizes an incinerator-waste heat boiler to combust the exhaust gases from the catalyst regenerator, the owner or operator shall record daily the rate of combustion of liquid or solid fossil fuels (liters/hr or kilograms/hr) and the hours of operation during which liquid or solid fossil fuels are combusted in the incinerator-waste heat boiler.

(e) For the purpose of reports under subsection 12.106(3) periods of excess emissions that shall be reported are defined as follows:

(i) (Reserved)

(ii) (Reserved)

(iii) (Reserved)

(iv) Any six-hour period during which the average emissions (arithmetic average of six contiguous one-hour periods) of sulfur dioxide as measured by a continuous monitoring system exceed the standard under subsection 12.407(5).

(7) **Test Methods and Procedures**

(a) For the purpose of determining compliance with subsection 12.407(3)(a)(i), the following reference methods and calculation procedures shall be used:

(i) For gases released to the atmosphere from the fluid catalytic cracking unit catalyst regenerator;

((a)) Method 5 for the concentration of particulate matter and moisture content,

((b)) Method 1 for sample and velocity traverses, and

((c)) Method 2 for velocity and volumetric flow rate.

(ii) For Method 5, the sampling time for each run shall be at least 60 minutes and the sampling rate shall be at least 0.015 dscm/min (0.53 dscf/min), except that shorter sampling times may be approved by the Department when process variables or other factors preclude sampling for at least 60 minutes.

(iii) For exhaust gases from the fluid catalytic cracking unit catalyst regenerator prior to the emission control system: the integrated sample techniques of Method 3 and Method 4 for gas analysis and moisture content, respectively; Method 1 for velocity traverses; and Method 2 for velocity and volumetric flow rate.

(iv) Coke burn-off rate shall be determined by the following formula:

$$R_C=0.2982\ Qre(\%CO_2+\%CO)+2.088\ Qra^{-0.0994}Qre\ (\frac{\%CO}{2}+\%CO_2+\%O_2)$$

(Metric Units)

or

$$R_C=0.0186\ Qre(\%CO_2+\%CO)+0.1303\ Qra^{-0.0062}Qre\ (\frac{\%CO}{2}+\%CO_2+\%O_2)$$

(English Units)

where:

R_C=coke burn-off rate, kg/hr (English units: lb/hr).
0.2982=metric units material balance factor divided by 100, kg-min/hr-m^3.
0.0186=English units material balance factor divided by 100, lb-min/hr-ft^3.
Qre=fluid catalytic cracking unit catalyst regenerator exhaust gas flow rate before entering the emission control system, as determined by method 2, dscm/min (English units: dscf/min).
$\%CO_2$=percent carbon dioxide by volume, dry basis, as determined by Method 3.
%CO=percent carbon monoxide by volume, dry basis, as determined by Method 3.
$\%O_2$=percent osygen by volume, dry basis, as determined by Method 3.
2.088=metric units material balance factor divided by 100, kg-min/hr-m^3.
0.1303=English units material balance factor divided by 100, lb-min/hr-ft^3.
Qra=air rate to fluid catalytic cracking unit catalyst regenerator, as determined from fluid catalytic cracking unit control room instrumentation dscm/min (English units: dscf/min).
0.0994=metric units material balance factor divided by 100, kg-min/hr-m^3.
0.0062=English units material balance factor by 100, lb-min/hr-ft^3.

(v) Particulate emissions shall be determined by the following equation:

$R_E=(60x10^{-6})QrvC_3$ (Metric Units)

$R_E=(8.57x10^{-3})QrvC_3$ (English Units) Units)

where:

R_E=particulate emission rate, kg/hr (English units: lb/hr).
$60x10^{-6}$=metric units conversion factor, min-kg/hr-mg.
$8.57x10^{-3}$=English units conversion factor, min-lb/hr-gr.

Qrv=volumetric flow rate of gases discharged into the atmosphere from the fluid catalytic cracking unit catalyst regenerator following the emission control system, as determined by Method 2, dscm/min (English units: dscf/min).
C_3=particulate emission concentration discharged into the atmosphere, as determined by Method 5, mg/dscm (English units: gr/dscf).

(vi) For each run, emissions expressed in kg (English units: lb/1000 lb) of coke burn-off in the catalyst regenerator shall be determined by the following equation:

$R_s=1000\frac{R_E}{R_c}$ (Metric or English Units)

where:

R_s=particulate emission rate, kg/1000 kg (English units: lb/1000 lb) of coke burn-off in the fluid catalytic cracking unit catalyst regenerator.
1000=conversion factor, kg to 1000 kg (English units: lb to 1000 lb).
R_E=particulate emission rate, kg/hr (English units: lb/hr).
R_c=coke burn-off rate, kg/hr (English units: lb/hr).

(vii) In those instances in which auxiliary liquid or solid fossil fuels are burned in an incinerator-waste heat boiler, the rate of particulate matter emissions permitted under division (3)(b) of this subsection must be determined. Auxiliary fuel heat input, expressed in millions of cal/hr (English units: Millions of Btu/hr) shall be calculated for each run by fuel flow rate measurement and analysis of the liquid or solid auxiliary fossil fuels. For each run, the rate of particulate emissions permitted under division (3)(b) of this subsection shall be calculated from the following equation:

$R_s=1.0+\frac{0.18\ H}{R_c}$ (Metric Units)

or

$R_s=1.0+\frac{0.10\ H}{R_c}$ (English Units)

where:

R_s=allowable particulate emission rate, kg/1000 kg (English units: lb/1000 lb) of coke burn-off in the fluid catalytic cracking unit catalyst regenerator.

1.0=emission standard, 1.0 kg/1000 kg (English units: 1.0 lb/1000 lb) of coke burn-off in the fluid catalytic cracking unit regenerator.

0.18=Metric units maximum allowable incremental rate of particulate emissions, g/million cal.

0.10=English units maximum allowable incremental rate of particulate emissions, lb/million Btu.

H=heat input from solid or liquid fossil fuel, million cal/hr (English units: million Btu/hr).

R_c=coke burn-off rate, kg/hr (English units: lb/hr).

(b) For the purpose of determining compliance with division (4) of this subsection, the integrated sample technique of Method 10 shall be used The sample shall be extracted at a rate proportional to the gas velocity at a sampling point near the centroid of the duct. The sampling time shall not be less than 60 minutes.

(c) For the purpose of determining compliance with division (5)(a) of this subsection, Method 11 shall be used. When refinery fuel gas lines are operating at pressures substantially above atmospheric, the gases sampled must be introduced into the sampling train at approximately atmospheric pressure. This may be accomplished with a flow control valve. If the line pressure is high enough to operate the sampling train without a vacuum pump, the pump may be eliminated from the sampling train. The sample shall be drawn from a point near the centroid of the fuel gas line. The minimum sampling time shall be 10 minutes and the minimum sampling volume 0.01 dscm (0.35 dscf) for each sample. The arithmetic average of two samples shall constitute one run. Samples shall be taken at approximately 1-hour intervals. For most fuel gases, sample times exceeding 20 minutes may result in depletion of the collecting solution, although fuel gases containing low concentrations of hydrogen sulfide may necessitate sampling for longer periods of time.

(d) Method 6 shall be used for determining concentration of SO_2 in determining compliance with divsion (5)(b) of this subsection except that H_2S concentration of the fuel gas may be determined instead. Method 1 shall be used for velocity traverses and Method 2 for determining velocity and volumetric flow rate. The sampling site for determining SO_2 concentration by Method 6 shall be the same as for determining volumetric flow rate by Method 2. The sampling point in the duct for determining SO_2 concentration by Method 6 shall be at the centroid of the cross section if the cross sectional area is less than 5 m^2 (54 ft^2) or at a point no closer to the walls than 1m (39 inches) if the cross sectional area is 5 m^2 or more and the centroid is more than one meter from the wall. The sample shall be extracted at a rate proportional to the gas velocity at the sampling point. The minimum sampling time shall be 10 minutes and the minimum sampling volume 0.01 dscm (0.35 dscf) for each sample. The arithmetic average of two samples shall constitute on run. Samples shall be taken at approximately 1-hour intervals.

12.409 Standards of Performance for Secondary Lead Smelters

(1) **Applicability and Designation of Affected Facility**

The provisions of this subsection are applicable to the following affected facilities in secondary lead smelters: Pot furnaces of more than 250 kg (550 lb) charging capacity, blast (cupola) furnaces, and reverberatory furnaces.

(3) **Standard for Particulate Matter**

(a) On and after the date on which the performance test required to be conducted by subsection 12.107 is completed, no owner or operator subject to the provisions of this subsection shall discharge or cause the discharge into the atmosphere from a blast (cupola) or reverberatory furnace any gases which:

(i) Contain particulate matter in excess of 50 mg/dscm (0.022 gr/dscf).

(ii) Exhibit 20 percent opacity or greater.

(b) On and after the date on which the performance test required to be conducted by subsection 12.107 is completed, no owner or operator subject to the provisions of this regulation shall discharge or cause the discharge into the atmosphere from any pot furnace any gases which exhibit 10 percent opacity or greater.

12.410 Standards of Performance for Secondary Brass and Bronze Ingot Production Plants

(1) **Applicability and Designation of Affected Facility**

The provisions of this subsection are applicable to the following affected facilities in secondary brass or bronze ingot production plants: Reverberatory and electric furnaces of 1.000 kg (2,205 lb) or greater production capacity and blast (cupola) furnaces of 250 kg/hr (550 lb/hr) or greater production capacity.

(3) **Standard for Particulate Matter**

(a) on and after the date on which the performance test required to be conducted by subsection 12.107 is completed, no owner or operator subject to the provisions of this subsection shall discharge or cause the discharge into the atmosphere from a reverberatory furnace any gases which:

(i) Contain particulate matter in excess of 50 mg/dscm (0.022 gr/dscf).

(ii) Exhibit 20 percent opacity or greater.

(b) On and after the date on which the performance test required to be conducted by subsection 12.107 is completed, no owner or operator subject to the provisions of this subsection shall discharge or cause the discharge into the atmosphere from any blast (cupola) or electric furnace any gases which exhibit 10 percent opacity or greater.

shall be at least 120 minutes and the sampling rate shall be at least 0.9 dscm/hr (0.53 dscf/min) except that shorter sampling times, when necessitated by process variables or other factors, may be approved by the Department. Particulate matter sampling shall be conducted during representative periods of charging and refining, but not during pouring of the heat.

12.412 Standards of Performance for Sewage Treatment Plants

(1) **Applicability and Designation of Affected Facility**

The affected facility to which the provisions of this subsection apply is each incinerator which burns the sludge produced by municipal sewage treatment facilities.

12.412

(3) Standard for Particulate Matter

On and after the date on which the performance test required to be conducted by subsection 12.107 is completed, no owner or operator of any sewage sludge incinerator subject to the provisions of this subsection shall discharge or cause the discharge into the atmosphere of:

(a) Particulate matter at a rate in excess of 0.65 g/kg dry sludge input (1.30 lb/ton dry sludge input).

(b) Any gases which exhibit 20 percent opacity or greater.

12.424 Standard of Performance for Steel Plants: Electric Arc Furnaces

(1) Applicability and Designation of Affected Facility

The provisions of this subsection are applicable to the following affected facilities in steel plants: electric arc furnaces and dust-handling equipment.

(3) Standard for Particulate Matter

(a) On and after the date on which the performance test required to be conducted by subsection 12.107 is completed, no owner or operator subject to the provisions of this subsection shall cause to be discharged into the atmosphere from an electric arc furnace any gases which:

(i) Exit from a control device and contain particulate matter in excess of 12 mg/dscm (0.0052 gr/dscf).

(ii) Exit from a control device and exhibit three percent opacity or greater.

(iii) Exit from a shop and, due solely to operation of any EAF(s), exhibit greater than zero percent shop opacity except:

((a)) Shop opacity greater than zero percent, but less than 20 percent, may occur during charging periods.

((b)) Shop opacity greater than zero percent, but less than 40 percent, may occur during tapping periods.

((c)) Opacity standards under subdivision (a)(iii) of this division shall apply only during periods when flow rates and pressures are being established under 12.424(5)(c) and (f).

((d)) Where the capture system is operated such that the roof of the shop is closed during the charge and the tap, and emissions to the atmosphere are prevented until the roof is opened after completion of the charge or tap, the shop opacity standards under subdivision (a)(iii) of the division shall apply when the roof is opened and shall continue to apply for the length of time defined by the charging and/or tapping periods.

(b) On and after the date on which the performance test required to be conducted by subsection 12.107 is completed, no owner or operator subject to the provisions of this subsection shall cause to be discharged into the atmosphere from dust-handling equipment any gases which exhibit 10 percent opacity or greater.

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(4) **Emission Monitoring**

(a) A continuous monitoring system for the measurement of the opacity of emissions discharged into the atmosphere from the control device(s) shall be installed, calibrated, maintained, and operated by the owner or operator subject to the provisions of this subsection.

(b) For the purpose of reports under subsection 12.106(3), periods of excess emissions that shall be reported are defined as all six-minute periods during which the average opacity is three percent or greater.

R 23-25-12

APPENDIX A - REFERENCE METHODS

The reference methods specified within R 23-25-12 are identical to those specified in Appendix A, as amended, of Title 40 Code of Federal Regulations, Part 60 (40 CFR 60). The methods, adopted by reference, are as follows:

Method 1 - Sample and Velocity Traverses for Stationary Sources

Method 2 - Determination of Stack Gas Velocity and Volumetric Flow Rate (Type S Pitot Tube)

Method 3 - Gas Analysis for Carbon Dioxide, Excess Air, and Dry Molecular Weight

Method 4 - Determination of Moisture in Stack Gases

Method 5 - Determination of Particulate Emissions from Stationary Sources

Method 6 - Determination of Sulfur Dioxide Emissions From Stationary Sources

Method 7 - Determination of Nitrogen Oxide Emissions from Stationary Sources

Method 8 - Determination of Sulfuric Acid Mist and Sulfur Dioxide Emissions from Stationary Sources

Method 9 - Visual Determination of the Opacity of Emissions from Stationary Sources

Method 10 - Determination of Carbon Monoxide Emission from Stationary Sources

Method 11 - Determination of Hydrogen Sulfide Emissions from Stationary Sources

Method 12 - Reserved

Method 13 A - Determination of Total Fluoride Emissions from Stationary Sources-SPADNS Zirconium Lake Method

Method 13 B - Determination of Total Fluoride Emissions from Stationary Sources-Specific Ion Electrode Method

3745-17-07 Control of visible air contaminants from stationary sources.

(A) Emission limitation.

(1) No person shall discharge into the atmosphere from any single source of emission whatsoever any air contaminant of a shade or density equal to or darker than that designated as No. 1 on the Ringelmann Chart or 20 percent opacity, except as set forth in subsection (A) (2) and section (B) of this regulation.

(2) A person may discharge into the atmosphere from any single source of emission for a period or periods aggregating not more than three minutes in any sixty minutes or for a period of time deemed necessary by the Board, air contaminants of a shade or density not darker than No. 3 on the Ringelmann Chart or 60 percent opacity.

3745-17-12 Restriction on emission of sulfur compounds from industrial processes.

(A) General provisions.

(1) The method of measuring sulfur oxides in stack gases shall be the Shell Development Company method as published in "Atmospheric Emissions from Sulfuric Acid Manufacturing Processes", Public Health Service Publication 999-AP-13, Appendix B, 85-7 which publication is made a part of this regulation by reference.

(2) The method of measuring sulfur trioxide, sulfuric acid, or any combination thereof in stack gases shall be the modified Monsanto Company method as published in "Atmospheric Emissions from Sulfuric Acid Manufacturing Processes", Public Health Service Publication 999-AP-13, Appendix B, 61-6 which publication is made part of this regulation by reference.

(3) Other test methods approved by the Board may be used.

(B) Concentration of sulfur compounds in emissions restricted.

(1) No person shall cause or allow the emission into the atmosphere from any source of an in-stack sulfur dioxide concentration exceeding 2000 ppm (volume) from existing process equipment or exceeding 500 ppm (volume) from any new process equipment, except as provided in subsections (2), (3), (4), (5), and (6) of this regulation.

(2) No person shall cause or permit the emission or combustion of any other process gas stream that contains hydrogen sulfide in concentration greater than 100 grains per 100 standard cubic feet of gas without removal of the hydrogen sulfide in excess of this concentration.

(3) No person shall cause or permit sulfur dioxide tail gas emissions from sulfuric acid manufacturing plants to exceed 6.5 pounds/ton of acid produced. The tail gas acid mist emissions are not to exceed 0.5 pounds/ton of acid produced and the sulfur trioxide emissions are not to exceed 0.2 pounds/ton of acid produced.

(4) No person shall cause or permit the sulfur oxide emissions from a sulfur recovery plant to exceed 0.01 pounds per pound of sulfur processed.

(5) No person shall cause or permit emissions of sulfur oxides from primary non-ferrous smelters to exceed that set forth according to the following equations.

Copper smelters: $Y = 0.2X$.

Zinc smelters: $Y = 0.564X^{0.85}$.

Lead smelters: $Y = 0.98X^{0.77}$.

Where X is the total sulfur fed into the smelter in pounds/hour and Y is the allowable sulfur emissions in pounds/hour.

(6) No person shall cause or permit the total sulfite pulp mill sulfur oxide emissions from blow pits, washer vents, storage tanks, digester relief, recovery system, etc. to exceed 9.0 pounds per air dried ton of pulp produced.

(7) Emergency discharge from safety relief valves shall be exempted from the provisions of 3745-17-12 and shall be reported as provided in 3745-15-06.

3745-17-13 Restrictions on Emission of Sulfur Dioxide from use of fuel.

(A) General Provisions.

(1) This regulation shall apply to any installation in which fuel is burned and in which the sulfur dioxide emission is largely due to the sulfur content of the fuel burned, and in which the fuel is burned primarily to produce heat or power by indirect heat transfer.

(2) For purposes of the regulation, a fuel burning installation is any single fuel-burning furnace or boiler or other unit, device, or contrivance in which fuel is burned or any grouping of two or more such furnaces or boilers or other units, devices, or contrivances which are united either physically or operationally or otherwise located in close proximity to each other and under control of the same person. The capacity of such installation shall be the manufacturer's or designer's guaranteed maximum heat input rate.

(3) The method of measuring sulfur oxides in stack gases shall be the Shell Development Company method as published in "Atmospheric Emissions from Sulfuric Acid Manufacturing Processes", Public Health Service Publication 999-AP-13 Appendix B, 85-7 which publication is made a part of this regulation by reference. The method for determining the percent of sulfur in coal shall be that described in ASTM D-271-68, Standard Methods of Laboratory Sampling and Analysis of Coal and Coke or equivalent method approved by the Board. The method for determining the heat content of coal shall be that described in ASTM D-271-68, Standard Methods of Laboratory Sampling and Analysis of Coal and Coke or D-2015-66, Tentative Method of Test for Gross Calorific Value of Solid Fuel by the Adiabatic Bomb Calorimeter. All coal analyses and heat contents are to be made on a dry basis. Moisture content of coal is to be determined in all cases and results reduced to facilitate calculations of actual pollutants. The method for determining the sulfur content of fuel oil shall be that described in ASTM D-129-64 Standard Method of Test for Sulfur in Petroleum Products by the Bomb Method. The method for determining the heat content of fuel oil shall be that described in ASTM D-240-64 Standard Method of Test for Heat of Combustion of Liquids by Bomb Calorimeter or other method giving comparable results. The testing methods specified in the subsection (A) (3) are hereby made a part of this regulation by reference.

(4) The Board is authorized to take samples of any fuel by any appropriate means and at any reasonable time or place, for purposes of determining compliance with this regulation where applicable, the following method will be used.

(a) For Coal: ASTM: D-492-48 (1958), Standard Method of Sampling Coals Classified according to Ash Content

ASTM: D-2013-68, Tentative Method of preparing Coal Samples for Analysis

ASTM: D-2234-68, Tentative Method for Mechanical Sampling of Coal

(b) For oil: ASTM: D-270-65, Standard Method of Sampling Petroleum and Petroleum Products.

(5) Upon request of the Board, the operator of any existing source of emission of sulfur dioxide resulting from the burning of fuels shall provide a sulfur analysis of the fuel used.

(6) If a fuel is used as an essential raw material in a manufacturing operation and its heat value is an incidental part of the operation, the restrictions of regulation 3745-17-13 shall not apply and the source shall be controlled under the provisions of the regulation 3745-17-12 and such other restrictions as the Board may impose to assure that the air quality standards will be met.

(7) Nothing in this regulation shall be interpreted to preclude research or experimentation into alternate methods of meeting the intent and restrictions of this regulation.

(B) Emission limitations.

(1) No person shall cause, suffer, allow or permit the emission of sulfur compounds caused by the combustion of fuel in fuel-burning equipment from any stack or chimney in excess of the quantity set forth in Figure III.

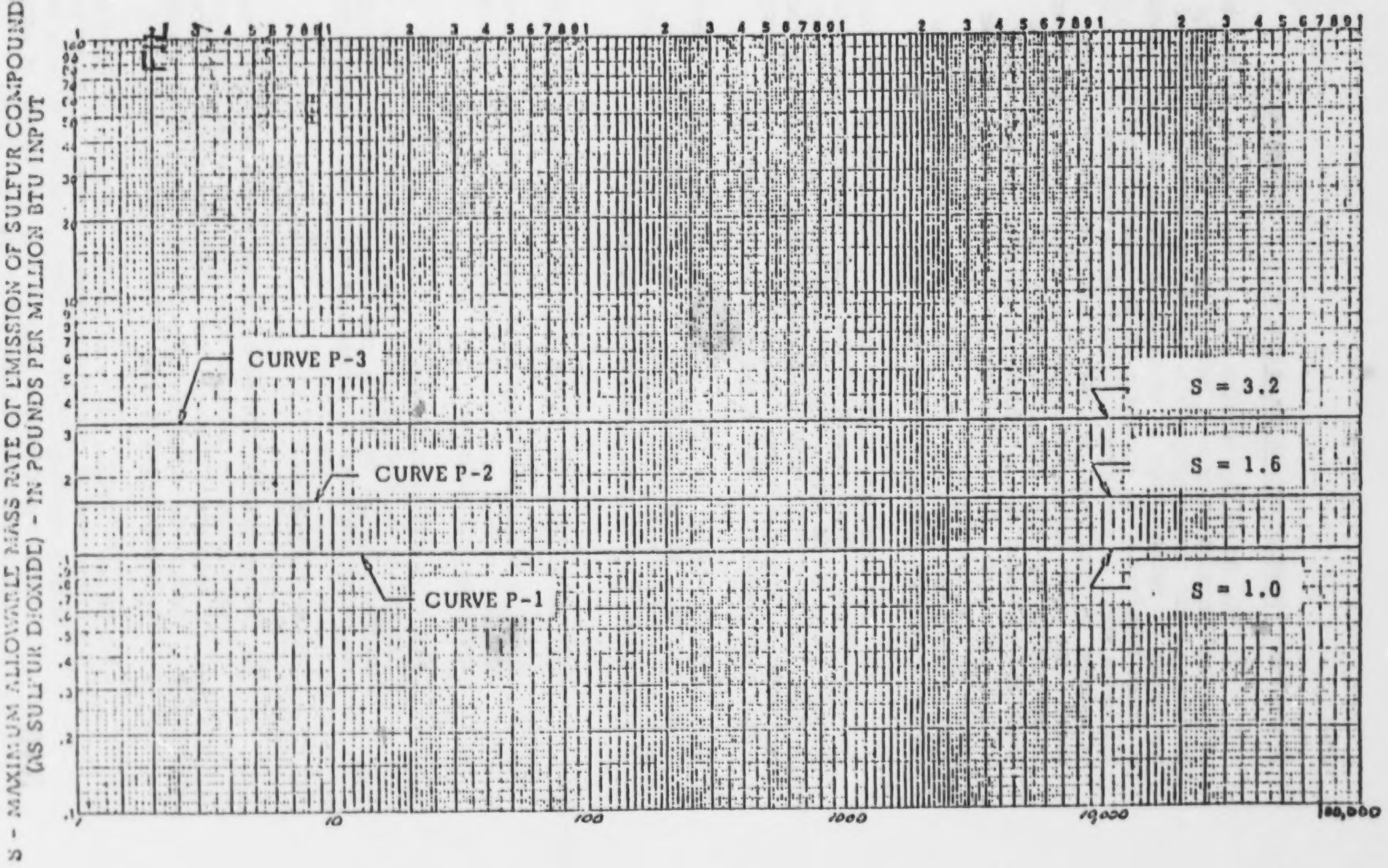
(2) All persons located within air quality control regions classified as Priority I Regions shall attain or exceed that degree of emission reduction specified by Curve P-1 by the effective date of this regulation.

(3) All persons located within air quality control regions classified as Priority II Regions shall attain or exceed that degree of emission reduction specified by Curve P-2 by the effective date of this regulation.

(4) All persons located within air quality control regions classified as Priority III Regions shall attain or exceed that degree of emission reduction specified by Curve P-3 by the effective date of this regulation.

(5) All persons located within air quality control regions classified as Priority II or III Regions shall attain or exceed, no later than July 1, 1975, that degree of emission reduction specified by Curve P-1.

FIGURE III


H - TOTAL HEAT INPUT, MILLIONS BTU PER HOUR
S - MAXIMUM ALLOWABLE MASS RATE OF EMISSION OF SULFUR COMPOUNDS (AS SULFUR DIOXIDE) - IN POUNDS PER MILLION BTU INPUT
CURVE P-3
CURVE P-2
CURVE P-1
S = 3.2
S = 1.6
S = 1.0
1
10
100
1000
10,000
100,000
.1
.2
.3
.4
.5
.6
.7
.8
.9
1
2
3
4
5
6
7
8
9
10
20
30
40
50
60
70
80
90
100

3745-15-04 Measurement of emissions of air contaminants.

(A) The Board may require any persons responsible for emission of air contaminants to make or have made tests to determine the emission of air contaminants from any source whenever the Board has reason to believe that an emission in excess of that allowed by these regulations is occurring or has occurred from time to time. All tests shall be conducted by qualified persons and the results calculated in accordance with test procedures approved by the Board. The owner or his authorized agent shall notify the Board in writing of the time, place, and person who will conduct the tests and the Board or its representative shall be permitted to witness the tests. The Board shall be furnished with a written report of test results no later than thirty (30) days after completion of the tests and such report shall be signed by the person or persons responsible for the tests.

(B) The Board may conduct tests of emissions of air contaminants from any source. Upon request of the Board the person responsible for the source to be tested shall provide necessary holes in stacks or ducts and such other safe and proper sampling and testing facilities, exclusive of instruments and sensing devices as may be necessary for proper determination of the emission of air contaminants.

(C) The Board may install, or require the owner or operator of any source of air contamination, at his expense, to install, use, and maintain monitoring equipment, and to sample his emissions in accordance with methods approved by the Board.

3745-23-06 Control of nitrogen oxides emissions from stationary sources.

(A) These regulations are applicable to all existing stationary sources located within a Priority I region and to all new sources regardless of location.

(B) Except as otherwise provided in these regulations, all stationary nitrogen oxide emission sources shall minimize nitrogen oxide emissions by use of the latest available control techniques and operating practices in accordance with best current technology.

(C) Combustion sources.

(1) No person shall cause or permit emissions of nitrogen oxides, calculated as nitrogen dioxide, from a gas-fired boiler with a capacity of 250 million B.T.U./hr or more and completed before the effective date of this regulation in excess of 0.20 pounds per million B.T.U. of heat input.

(2) No person shall cause or permit emissions of nitrogen oxides, calculated as nitrogen dioxide, from an oil fired boiler with a capacity of 250 million B.T.U./hr. or more and completed before the effective date of this regulation in excess of 0.30 pounds per million B.T.U. of heat input.

(3) No person shall cause or permit emissions of nitrogen oxides, calculated as nitrogen dioxide, from a coal-fired boiler with a capacity of 250 million B.T.U. per hour or more in excess of 0.9 pounds per million B.T.U. of heat input.

(D) Nitric acid manufacture.

No person shall cause or permit the emission of nitrogren oxides, calculated as nitrogen dioxide, from nitric acid manufacturing plants in excess of 5.5 pounds per ton of 100 percent acid produced.

5.1 No person shall cause, suffer, allow, or permit the discharge of smoke from an incinerator of a density darker than number one (1) on the Ringelmann Chart or a visible emission of such an equivalent opacity as to obscure a certified visible emission evaluator's view to a degree greater than number one (1) on the Ringelmann Chart.

5.12 Paragraph 5.1 of this regulation shall not apply to:

5.121 Visible emissions consisting of uncombined water droplets.

5.122 Smoke, the density of which is not darker than number three (3) of the Ringelmann Chart for a period aggregating no more than five (5) minutes in any sixty (60) consecutive minutes or more than twenty (20) minutes in any twenty-four (24) hour period.

5.2 No person shall cause or allow to be emitted into the open air from any incinerator equipment, fly ash or other particulate matter in quantities greater than shown

7.1 Smoke, Visible Emissions and Particulates

7.11 No person shall cause, suffer, allow, or permit discharge of any fumes, aerosol, mist, gas, smoke, vapor, particulate matter, or any combination thereof of a shade or density darker than number one (1) on the Ringelmann Chart or twenty (20) percent equivalent opacity.

7.12 Paragraph 7.11 shall not apply to:

7.121 Smoke or visible emissions emitted during the cleaning of a fire, the building of a new fire or the blowing of soot from boilers, or other short-term occurrences, the shade or density of which is not darker than number three (3) of the Ringelmann Chart or sixty (60) percent opacity for a period aggregating no more than five (5) minutes in any sixty (60) consecutive minutes and/or no more than 20 minutes in any 24-hour period.

7.122 Smoke resulting from fires covered by the exceptions outlined in Regulation No. 1.

12.1 All tests shall be made and the results calculated in accordance with test procedures approved by the Commissioner. All tests shall be made under the direction of a person qualified by training and/or experience in the field of air pollution control.

16.3 New Equipment - Sulfur Oxides Standards

16.31 Sulfuric Acid Plants

16.311 Emission Limit

A person operating a new sulfuric acid plant shall not cause, suffer, or allow the discharge into the atmosphere of:

1. Sulfur dioxide in the effluent in excess of four (4) pounds per ton of 100 percent sulfuric acid produced (2 kgm per metric ton), maximum two-hour average.
2. Sulfuric acid mist which is in excess of 0.15 pound per ton of 100 percent sulfuric acid produced (75 grams per metric ton), maximum two-hour average, expressed as H_2SO_4.
3. A visible emission equivalent to an opacity of 1/4 Ringelmann or five (5) percent equivalent opacity.

These emission limits shall apply to only those sulfuric acid plants producing sulfuric acid by the contact process by burning elemental sulfur, alkylation acid, hydrogen sulfide, organic sulfides and mercaptans or acid sludge.

16.312 Emission Monitoring

a. All sulfuric acid plants regulated under this subsection shall have installed, calibrated, maintained and operated, an instrument for continuously monitoring and recording emissions of sulfur dioxide. The instrument installed and used pursuant to this section shall have a confidence level of at least 95 percent and be accurate with ±20 percent and shall be calibrated in accordance with the method(s) prescribed by the manufacturer(s) of such instrument. The instrument shall be calibrated at least once per year unless the manufacturer(s) specifies or recommends calibration at shorter intervals, in which case such specifications or recommendations shall be followed.

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b. The owner or operator of any sulfuric acid plant subject to provisions of this subparagraph shall maintain a file of all measurements required and retain the record of any such measurement for at least one year following the date of such measurement.

16.313 Performance Testing

Testing of new sulfuric acid plants to determine if emission standards set in this regulation are met shall be performed by procedures as given in proposed Code of Federal Regulation 466.65 given in Federal Register, Volume 36, Number 159, August 17, 1971, as finally promulgated.

All tests shall be conducted, supervised or approved by a person qualified by training and/or experience in the field of air pollution control.

16.32 Fuel-burning Equipment

16.321 Emission Limit

a. No person shall cause, suffer or allow the discharge into the atmosphere of sulfur oxides measured as sulfur dioxide from new gas fuel-burning equipment in excess of 0.2 pound per million BTU heat input (0.36 gram per million gram-calories), maximum two-hour average.

b. No person shall cause, suffer or allow the discharge into the atmosphere from new liquid fuel-burning equipment in excess of that shown in the following table on the listed effective date.

Effective Date	Sulfur Oxide Emissions Maximum 2 Hr. Average Lbs/million BTU Input
July 1, 1972	0.8

c. No person shall cause, suffer or allow the discharge into the atmosphere from new solid fuel-burning equipment in excess of 1.2 pounds per million BTU heat input (2.20 grams per million gram-calories), maximum two-hour average.

d. Where different fuels are burned simultaneously in any combination, the applicable standard shall be determined by proration. Compliance shall be determined using the following formula:

Effective Date	Formula
July 1, 1972	$\frac{y(0.80) + z(1.2)}{y + z}$

where:

y is the percent of total heat input derived from liquid fuel and,

z is the percent of total heat input derived from solid fuel.

16.322 Emission and Fuel Monitoring

a. There shall be installed, calibrated, maintained, and operated, in any new fuel-burning equipment with a rated heat input of 250 million BTU/hr or more emission monitoring instruments as follows:

1. A photoelectric or other type smoke detector and recorder, except where gaseous fuel is the only fuel burned.

2. An instrument for continuously monitoring and recording sulfur dioxide emissions, except where gaseous fuel containing less than 0.1 percent sulfur is the only fuel burned.

b. Instruments installed and used for monitoring shall have a confidence level of at least 95 percent and be accurate within ±20 percent and shall be calibrated in accordance with the method(s) prescribed by the manufacturer(s) of such instruments; instruments shall be calibrated at least once per year unless the manufacturer(s) specifies or recommends calibration at shorter intervals in which case such specifications or recommendations shall be followed.

c. The sulfur content of solid fuels as burned, shall be determined in accordance with the latest revision to the American Society for Testing Materials Method D271, the sulfur content of liquid fuels, as burned, shall be determined in accordance with the American Society for Testing Materials Methods D129 or D1552. Other methods for determining the sulfur content of solid and liquid fuels may be used as approved by the Commissioner.

d. The owner or operator of any fuel-burning equipment with a rated heat input of 250 million BTU/hr or over shall maintain a file of all measurements required under 16.322(a), (b), and (c) and shall retain the record of any such measurement(s) for at least one (1) year following the date of such measurements.

16.323 Test Methods and Procedures

Testing of new fuel-combustion equipment to determine if the emission standards set in this regulation are met shall be performed by procedures as given in the proposed Code of Federal Regulation 466.26 in the Federal Register, Volume 36, Number 159, August 17, 1971, as finally promulgated.

All tests shall be conducted, supervised or approved by a person qualified by training and/or experience in the field of air pollution control.

16.33 Sulfur Recovery Plants

16.331 Emission Limit

a. Natural Gas Processing

The emission of sulfur oxides, calculated as sulfur dioxide, from a new natural gas processing sulfur recovery plant shall not be more than 100 pounds per hour, maximum two-hour average but not more than 20 pounds per ton of sulfur processed as a minimum control efficiency.

b. Other Processes

The emission of sulfur oxides, calculated as sulfur dioxide, from a new sulfur recovery plant operating in conjunction with other processes is limited to 20 pounds per ton of sulfur processed, maximum two-hour average.

16.332 Emission Monitoring

a. All new sulfur recovery plants regulated under this subsection shall have calibrated, maintained, and operated an instrument for continuously monitoring and recording emissions of sulfur dioxide. The instrument installed and used pursuant to this section shall have a confidence level of at least 95 percent and be accurate within ±20 percent and shall be calibrated in accordance with the method(s) prescribed by the manufacturer(s) of such instrument, the instrument shall be calibrated at least once per year unless the manufacturer(s) specifies or recommends calibration at shorter intervals, in which case such specifications or recommendations shall be followed.

b. The owner or operator of any sulfur recovery plant subject to provisions of this subparagraph shall maintain a file of all measurements required and retain the record of any such measurement for at least one (1) year following the date of such measurement.

16.333 Performance Testing

Testing of sulfur recovery plants to determine if emission standards set in this regulation are met shall be performed by procedures as accepted by the Commissioner. Promulgated federal testing procedures for similar processes will be considered in making the determination of procedures to be used.

All tests shall be conducted, supervised or approved by a person qualified by training and/or experience in the field of air pollution control.

16.34 Nonferrous Smelters

16.341 Emission Limit

The emission of sulfur oxides, calculated as sulfur dioxide, from new nonferrous smelters is restricted according to the following equations as a maximum two-hour average.

Copper Smelters: $Y = 0.2X$

Zinc Smelters: $Y = 0.564X^{0.85}$

Lead Smelters: $Y = 0.98X^{0.77}$

where X = Total sulfur fed to smelter (lb/hr)

Y = Sulfur dioxide emissions (lb/hr)

16.342 Emission Monitoring

a. All new nonferrous smelters regulated under this subsection shall have installed, calibrated, maintained and operated an instrument for continuously monitoring and recording emissions of sulfur dioxide.

b. The owner or operator of any new nonferrous smelter subject to provisions of this subparagraph shall maintain a file of all measurements required and retain the record of any such measurement for at least one (1) year following the date of such measurement.

16.343 Performance Testing

Testing of nonferrous smelter plants to determine if emission standards set in this regulation are met shall be performed by procedures as accepted by the Commissioner. Promulgated federal testing procedures for similar processes will be considered in making the determination of procedures to be used.

All tests shall be conducted, supervised or approved by a person qualified by training and/or experience in the field of air pollution control.

16.35 Paper Pulp Mill

16.351 Emission Limit

The emission of sulfur oxides, calculated as sulfur dioxide, from the blow pits, washer vents, storage tanks, digester relief, and recovery furnace of any new paper pulp mill shall not exceed eighteen pounds per air-dried ton of pulp produced, maximum two-hour average.

16.352 Emission Monitoring

a. All new paper pulp mills shall have installed, calibrated, maintained and operated instruments for continuously monitoring and recording emissions of sulfur dioxide from the recovery system gas-cleaning equipment and other locations as required by the Commissioner. The instrument installed and used pursuant to this section shall have a confidence level of at least 95 percent and be accurate within ±20 percent and shall be calibrated in accordance with the method(s) prescribed by the manufacturer(s) of such instrument, the instrument shall be calibrated at least once per year unless the manufacturer(s) specifies or recommends calibration at shorter intervals, in which case such specifications or recommendations shall be followed.

b. The owner or operator of any new paper pulp mill subject to provisions of this subparagraph shall maintain a file of all measurements required and retain the record of any such measurement for at least one year following the date of such measurement.

16.353 Performance Testing

Testing of paper pulp mills to determine if emission standards set in this regulation are met shall be performed by procedures as accepted by the Commissioner. Promulgated federal testing procedures for similar processes will be considered in making the determination of procedures to be used.

All tests shall be conducted, supervised or approved by a person qualified by training and/or experience in the field of air pollution control.

16.4 Existing Equipment - Hydrogen Sulfide Standards

16.41 Standard

No person shall cause, let, suffer, or allow any emission of hydrogen sulfide from any source which results in an ambient air concentration of hydrogen sulfide at any given point of 0.1 ppm for a 30-minute period. These limitations shall not apply to ambient air concentrations occurring on the property from which such emission occurs, providing such property, from the point of any such concentration is controlled by the person responsible for such emission.

16.5 New Equipment - Hydrogen Sulfide Standards

16.51 Petroleum and Natural Gas Processes

16.511 Emission Limit

a. No person shall cause, suffer, or allow the discharge into the atmosphere of hydrogen sulfide from any new petroleum or natural gas processing equipment without removal of the hydrogen sulfide from the exhaust gas or oxidizing it to sulfur dioxide in a system which insures at all times complete combustion of the hydrogen sulfide, with the exhaust gas then being emitted from a stack at least 50 feet in height. Efficiency of these removal or oxidation systems shall not allow to be emitted more than 0.3 pound per hour of hydrogen sulfide as a two-hour maximum, with a maximum efficiency required of 95 percent of the hydrogen sulfide in the exhaust gas.

b. Direct oxidation of hydrogen sulfide to sulfur oxides without a prior removal step meeting emission limits of 16.331 is not allowed for any system which would allow discharge of more than 100 pounds per hour of sulfur oxides expressed as sulfur dioxide, maximum two-hour average.

16.513 Performance Testing

Testing of petroleum and natural gas processing plants to determine if emission standards set in this regulation are met shall be performed by procedures as accepted by the Commissioner. Promulgated federal testing procedures for similar processes will be considered in making the determination of procedures to be used. All tests shall be conducted, supervised or approved by a person qualified by training and/or experience in the field of air pollution control.

Regulation No. 18

Control of Emission of Nitrogen Oxides

18.1 Purpose

The purpose of this regulation is to control the emission of nitrogen oxides from stationary sources to prevent the Oklahoma air quality standards from being exceeded and insure that the present level of air quality in Oklahoma is not degraded.

18.2 Emission Limits

18.21 Fuel Combustion

a. No person shall cause, suffer or allow emissions of nitrogen oxides calculated as nitrogen dioxide from any new gas-fired fuel-burning equipment with a rated heat input of 50 million BTU per hour or more, in excess of 0.20 pound per million BTU (0.36 gram per million gram-calorie) heat input, two-hour maximum.

b. No person shall cause, suffer or allow emissions of nitrogen oxides calculated as nitrogen dioxide from any new liquid-fired fuel-burning equipment with a rated heat input of 50 million BTU per hour or more, in excess of 0.30 pound per million BTU (.54 gram per million gram-calorie) heat input, two-hour maximum.

c. No person shall cause, suffer or allow emissions of nitrogen oxides calculated as nitrogen dioxide from any new solid fossil fuel-burning equipment with a rated heat input of 50 million BTU per hour or more, in excess of 0.70 pound per million BTU (1.26 gram per million gram-calorie) heat input, two-hour maximum.

18.22 Nitric Acid Plant

No person shall cause, suffer or allow emissions of nitrogen oxides, calculated as nitrogen dioxide, from new nitric acid plants, in excess of 3.0 pounds per ton (1.5 kg/metric ton) of 100 percent acid produced, two-hour maximum.

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No person shall cause, suffer or allow any visible emissions from new nitric acid plants.

18.3 Performance Testing

Testing of equipment to determine if emission standards set in this regulation are met shall be performed by procedures as accepted by the Commissioner. Promulgated federal testing procedures for similar processes will be considered in making the determination of procedures to be used.

OKLAHOMA

MINIMUM EMISSION MONITORING REQUIREMENTS FOR AIR CONTAMINANT SOURCES

Pursuant to the State Board of Health's Regulation No. 13, "Monitoring of Emissions, Recording and Reporting of the Same Are Required," the Commissioner sets forth below minimum requirements for emission monitoring for air contaminant sources.

1.0 Sources Not Covered by New Source Performance Standard.

1.1 Applicability.

The Commissioner requires the owner or operator of emission sources listed below to: (1) install, calibrate, operate, and maintain all monitoring equipment necessary for continuous monitoring of the pollutants specified here for the applicable sources; and (2) to complete the installation and performance tests of such equipment and begin monitoring and recording emissions on or before April 6, 1978.

1.2 Exemptions.

The Commissioner grants exemptions from these monitoring requirements where:

1.2.1 The source is scheduled for retirement within five (5) years of the issuance of these requirements by the Commissioner; or

1.2.2 The Commissioner has approved alternate monitoring requirements under the criteria in Section 6, Special Consideration.

1.3 Extensions.

The Commissioner may allow extensions of time to complete the requirements of this order on application of the owner or operator of an emission source provided the owner or operator demonstrates that good faith efforts have been made to obtain and install the required devices within the required time.

1.4 Monitoring System Malfunction.

Upon application by persons subject to this guideline, the Commissioner may provide temporary exemption from the monitoring and reporting requirements during a monitoring system malfunction provided the owner or operator shows, to the satisfaction of the Commissioner, that the malfunction was unavoidable and being repaired as expeditiously as practicable.

2.0 Minimum Monitoring Requirements.

The Commissioner requires the sources listed below to monitor emissions as described.

2.1 Fossil Fuel-Fired Steam Generators.

Emission monitoring as specified here is required for fossil fuel-fired steam generators having greater than 250 million BTU per hour heat input where the annual average capacity factor as reported to the Federal Power Commission for the calendar year 1974 is greater than 30 percent or where the capacity factor is greater than 30 percent as otherwise determined by the state.

2.1.1a Equivalent Opacity. Continuous monitoring of equivalent opacity is required except where (1) gaseous fuel is the only fuel burned or (2) oil or a combination of oil and gas is burned and particulate matter collection equipment is not utilized to achieve compliance with an applicable regulation controlling visible emissions or particulate matter emissions and the source has not been found in a judicial or administrative proceeding to be in violation of a visible emission regulation.

2.1.1b Sulfur Dioxide. Continuous monitoring of sulfur dioxide emissions is required where the source utilizes an air pollution abatement operation to make a significant reduction in the emissions of sulfur dioxide.

2.1.1c Oxygen or Carbon Dioxide. Continuous monitoring of oxygen or carbon dioxide is required where it is necessary to convert sulfur dioxide monitoring results.

2.2 Sulfuric Acid Plants.

Continuous monitoring of sulfur dioxide is required for sulfuric acid plants required to limit emissions by the applicable requirements of the State Board of Health's Regulation 16 where the production capacity is greater than 300 tons per day expressed as 100 percent acid except where the conversion of sulfuric acid is utilized as a means of preventing emissions to the atmosphere of sulfur dioxide or other sulfur compounds.

2.3 Fluid Bed Catalytic Cracking Unit Catalyst Regenerators at Petroleum Refineries.

Continuous monitoring of opacity is required for fluid bed catalytic cracking unit emissions where the capacity is greater than 20,000 barrels per day of fresh feed.

2.4 Other Facilities.

The Commissioner will from time to time, as necessity dictates, require other facilities/sources to install emission monitoring devices. These future requirements may be on an industry-wide basis or on individual segments or facilities of a given industry.

3.1 Performance Specifications.

The performance specifications set forth in Appendix B, are incorporated herein and will be used by the Commissioner to determine acceptability of monitoring equipment installed pursuant to this Guideline. The Performance Specifications to be used with each type of monitoring system are listed below.

3.1.1 Continuous monitoring systems for measuring opacity shall comply with Performance Specification 1.

3.1.2 Continuous monitoring systems for measuring sulfur dioxide shall comply with Performance Specification 2.

3.1.3 Continuous monitoring systems for measuring oxygen shall comply with Performance Specification 3.

3.1.4 Continuous monitoring systems for measuring carbon dioxide shall comply with Performance Specification 3.

3.2 Exemptions.

Any source which has purchased a continuous emission monitoring system(s) prior to September 11, 1974 shall be exempt from meeting such test procedures prescribed in Appendix B for the period ending October 1, 1981.

3.3 For sulfur dioxide monitoring systems installed on fossil fuel-fired steam generators or sulfuric acid plants the pollutant gas used to prepare calibration gas mixtures (Section 2.1 Performance Specification 2, Appendix B) shall be sulfur dioxide (SO_2). Span and zero gases should be traceable to National Bureau of Standards reference gases whenever these reference gases are available. Every six months from date of manufacture, span and zero gases shall be reanalyzed by conducting triplicate analyses using the reference methods in Source Sampling Procedures and Test Requirements as follows: for sulfur dioxide, use Reference Method 6; and for carbon dioxide or oxygen, use Reference Method 3. The gases may be analyzed at less frequent intervals if longer shelf lives are guaranteed by the manufacturer.

3.4 Cycling Times.

Cycling times include the total time a monitoring system requires to sample, analyze and record an emission measurement.

3.4.1 Continuous monitoring systems for measuring opacity shall complete a minimum of one cycle of operation (sampling, analyzing, and data recording) for each successive 10-second period.

3.4.2 Continuous monitoring systems for measuring carbon dioxide, oxygen, or sulfur dioxide shall complete a minimum of one cycle of operation (sampling, analyzing, and data recording) for each successive 15-minute period.

3.5 Monitor Location.

Monitoring systems or devices installed pursuant to this Guideline shall be located such that representative measurements of emissions or process parameters (i.e., oxygen or carbon dioxide) from the affected facility are obtained. Additional guidance for location of continuous monitoring systems to obtain representative samples are contained in the applicable Performance Specifications Appendix B. (See Para. 6.0)

3.6 Combined Effluents.

When the effluents from two or more affected facilities of similar design and operating characteristics are combined before being released to the atmosphere, monitoring systems or devices required by this Guideline may be installed on the combined effluent. When the affected facilities are not of similar design and operating characteristics, or when the effluent from one affected facility is released to the atmosphere through more than one point, the Commissioner will establish alternate procedures to implement the intent of these requirements.

3.7 Zero and Drift.

Owners or operators of all continuous monitoring systems installed in accordance with the requirements of this Guideline shall; record the zero and span drift in accordance with the method prescribed by the manufacturer of such instruments; subject the instruments to manufacturer's recommended zero and span check at least once daily unless the manufacturer has recommended adjustments at shorter intervals, in which case such recommendations shall be followed; adjust the zero and span whenever the 24-hour zero drift or 24-hour calibration drift limits of the applicable performance specifications in Appendix B are exceeded; adjust continuous monitoring systems referenced by paragraph 3.2 of this Guideline whenever the 24-hour zero drift or 24-hour calibration drift exceeds 10 percent of the emission standard.

3.8 Span.

Instrument span should be approximately 200 percent of the expected instrument data display output corresponding to the emission standard for the source.

3.9 Alternative Procedures and Requirements.

The Commissioner may on a case-by-case basis utilize different but equivalent procedures and requirements for continuous monitoring systems as he deems necessary to implement the intent of this Guideline.

4.0 Data Reduction.

A facility which is required to install and operate continuous monitoring equipment for the purpose of submitting emission data to the state shall use the following procedures to convert the monitoring data to the required standard units.

4.1 Fossil Fuel-Fired Steam Generators.

For fossil fuel-fired steam generators, the following procedures shall be used to convert gaseous emission monitoring data in parts per million to lb/million BTU:

4.1.1 When the owner or operator of a fossil fuel-fired steam generator elects to measure oxygen in the flue gases, the measurements of the pollutant concentration and oxygen concentration shall be on a dry basis and the following conversion procedure used:

$$E = CF \frac{20.9}{20.9 - \%O_2}$$

4.1.2 If the owner or operator elects to measure carbon dioxide in the flue gases, the measurement of the pollutant concentration and the carbon dioxide concentration shall be on a consistent basis (wet or dry) and the following conversion procedure used:

$$E = CF_c \frac{100}{\%CO_2}$$

4.1.3 The values used in the equations are derived as follows:

E = pollutant emission, lb/million BTU.

C = pollutant concentration, lb/dscf, determined by multiplying the average concentration (ppm) for each hourly period by 2.64×10^{-9} M lb/dscf per ppm where M = pollutant molecular weight, lb/lb-mole. M = 64 for sulfur dioxide.

$\%O_2$, $\%CO_2$ = Oxygen or carbon dioxide volume (expressed as percent).

F, F_c = A factor representing a ratio of the volume of dry flue gases generated to the calorific value of the fuel combusted (F), and a factor representing a ratio of the volume of carbon dioxide generated to the calorific value of the fuel combusted (F_c), respectively. Values of F and F_c can be found in paragraph 10.

4.2 For sulfuric acid plants the owner or operator shall establish a conversion factor to convert monitoring data into the applicable standard (lb/short ton).

4.2.1 The conversion factor shall be determined three times daily by measuring the concentration of sulfur dioxide entering the converter and calculating the appropriate conversion factor for each eight-hour period as follows:

$$CF = K \frac{1,000 - 0.015r}{r - s}$$

where: CF = Conversion factor, lb/short ton per ppm.

K = Constant derived from material balance. For determining CF in English units. K = 0.1306.

r = Percentage of sulfur dioxide by volume entering the gas converter.

s = Percentage of sulfur dioxide by volume in the emissions to the atmosphere determined by the continuous monitoring system.

4.3 For nitric acid plants the owner or operator shall establish a conversion factor for converting monitoring data into units of the applicable standard (lb/short ton).

4.3.1 The conversion factor shall be established by measuring emissions with the continuous monitoring system concurrent with measuring emissions using Method 7 reference test. Then using only that portion of the continuous monitoring data which was generated concurrent with the reference test, the conversion factor can then be determined by dividing the reference method data averages by the continuous monitoring system averages to obtain a ratio expressed in units of the monitoring data; i.e., lb/short ton per ppm.

4.3.2 The conversion factor shall be reestablished during any performance testing or any continuous monitoring system performance evaluation.

4.4 For fluid bed catalytic cracking unit catalyst regenerators at petroleum refineries, the owner or operator shall be required to submit opacity data per 5.1.

5.0 Data Reporting.

Owners or operators of facilities which have installed continuous monitoring systems shall submit a written report of excess emissions for each calendar quarter indicating the nature and cause of the excess emissions, if known. The averaging period used for data reporting shall correspond to the averaging period specified in the emission test method used to determine compliance with an emission standard for the pollutant source category in question. The report shall include, as a minimum, the following data:

5.1 For opacity measurements, the summary shall consist of the magnitude in actual percent opacity greater than the opacity standard in the applicable plan for each hour of operation of the facility, with the exception that any five (5)-minute period in a sixty (60)-minute period which does not exceed 20 minutes in a 24-hour period can be exempt from the excess averages. Average values will be obtained by integration over the averaging period or by arithmetically averaging a minimum of four equally spaced, instantaneous opacity measurements per minute (minus the five-minute exemption).

5.2 For gaseous measurements, the summary shall consist of emission averages, in the units of the applicable standard, for each averaging period during which the applicable standard was exceeded.

5.3 Each report will contain the date and time identifying each period during which the continuous monitoring system was inoperative, except for zero and span checks, and the nature of system repairs or adjustments shall be reported.

5.4 When no excess emissions have occurred and the continuous monitoring system(s) have not been inoperative, repaired, or adjusted, such information will also be included.

5.5 Owners or operators will maintain a file of all information reported in the quarterly summaries, and all other data collected either by the continuous monitoring system or as necessary to convert monitoring data to the units of the applicable standard for a minimum of two years from the date of collection of such data or submission of such summaries.

6.0 Special Considerations.

Approval of alternative monitoring requirements from those detailed in Sections 1 through 5 for existing sources may be approved upon application with the Air Quality Service. In such cases, a conference should be sought by the owner/operator with the Commissioner. In all cases of Special Consideration, the owner/operator must justify the requested exemption and propose alternative monitoring techniques. Special consideration for utilization of alternative monitoring techniques in exemption from required monitoring can only be granted if one or more of the following limitations can be established by the owner/operator:

a. Continuous monitoring requirements will result in extreme economic hardship.
b. Continuous monitoring equipment is not compatible with physical plant configuration.
c. Continuous monitoring will not provide accurate determination of emissions.
d. Infrequent facility operation.

7.0 Source Subject to New Source Performance Standards: The Commissioner requires the owner or operators of emission sources listed in the following subparts to install, calibrate, operate and maintain all monitoring equipment necessary for continuous monitoring of the specified pollutants.

8.0 Data Reporting: Facilities subject to the following subparts shall maintain and submit data in accordance with Section 5 of this guide.

9.0 Monitoring Requirements.

9.1 Unless otherwise approved by the Commissioner or specified in applicable subparts, the requirements of this section shall apply to all continuous monitoring systems required under applicable subparts.

9.2 All continuous monitoring systems and monitoring devices shall be installed and operational prior to conducting performance tests under Regulation 14.1.11. Verification of operational status shall, as a minimum, consist of the following:

9.2.1 For continuous monitoring systems referenced in paragraph 9.3.1 of this section, completion of the conditioning period specified by applicable requirements in Appendix B.

9.2.2 For continuous monitoring systems referenced in paragraph 9.3.2 of this section, completion of seven (7) days of operation.

9.2.3 For monitoring devices referenced in applicable subparts, completion of the manufacturer's written requirements or recommendations for checking the operation or calibration of the device.

9.3 During any performance tests required or within 30 days thereafter and at such other times as may be required by the Commissioner, the owner or operator of any affected facility shall conduct continuous monitoring system performance evaluations and furnish the Commissioner within 60 days thereof two or, upon request, more copies of a written report of the results ot such tests. These continuous monitoring system performance evaluations shall be conducted in accordance with the following specifications and procedures:

9.3.1 Continuous monitoring systems listed within this paragraph except as provided in paragraph 9.3.2 of this section shall be evaluated in accordance with the requirements and procedures contained in the applicable performance specification of Appendix B as follows:

(i) Continuous monitoring systems for measuring opacity of emissions shall comply with Performance Specification 1.

(ii) Continuous monitoring systems for measuring nitrogen oxide emissions shall comply with Performance Specification 2.

(iii) Continuous monitoring systems for measuring sulfur dioxide emissions shall comply with Performance Specification 2.

(iv) Continuous monitoring systems for measuring the oxygen content or carbon dioxide content of effluent gases shall comply with Performance Specification 3.

9.3.2 An owner or operator who, prior to September 11, 1974, entered into a binding contractual obligation to purchase specific continuous monitoring system components except as referenced by paragraph 9.3.2 (iii) of this section shall comply with the following requirements:

(i) Continuous monitoring systems for measuring opacity of emissions shall be capable of measuring emission levels within ±20 percent with a confidence level of 95 percent. The Calibration Error Test and associated calculation procedures set forth in Performance Specification 1 of Appendix B shall be used for demonstrating compliance with this specification.

(ii) Continuous monitoring systems for measurement of nitrogen oxides or sulfur dioxide shall be capable of measuring emission levels within ±20 percent with a confidence level of 95 percent. The Calibration Error Test, the Field Test for Accuracy (Relative), and associated operating and calculation procedures set forth in Performance Specification 2 of Appendix B shall be used for demonstrating compliance with this specification.

(iii) Owners or operators of all continuous monitoring systems installed on an affected facility prior to October 6, 1976 are not required to conduct tests under paragraphs 9.3.2(i) and/or (ii) of this section unless requested by the Commissioner.

9.3.3 All continuous monitoring systems referenced by paragraph 9.3.2 of this section shall be upgraded or replaced (if necessary) with new continuous monitoring systems, and such improved systems shall be demonstrated to comply with applicable performance specifications under paragraph 9.3.1 of this section by September 11, 1979.

9.4 Owners or operators of all continuous monitoring systems installed in accordance with the provisions of this part shall check the zero and span drift at least once daily in accordance with the method prescribed by the manufacturer of such systems unless the manufacturer recommends adjustments at shorter intervals, in which case such recommendations shall be followed. The zero and span shall, as a minimum, be adjusted whenever the 24-hour zero drift or 24-hour calibration drift limits of the applicable performance specifications in Appendix B are exceeded. For continuous monitoring systems measuring opacity of emissions, the optical surfaces exposed to the effluent gases shall be cleaned prior to performing the zero or span drift adjustments except that for systems using automatic zero adjustments, the optical surfaces shall be cleaned when the cumulative automatic zero compensation exceeds four (4) percent opacity. Unless otherwise approved by the Commissioner, the following procedures, as applicable, shall be followed.

9.4.1 For extractive continuous monitoring systems measuring gases, minimum procedures shall include introducing applicable zero and span gas mixtures into the measurement system as near the probe as is practical. Span and zero gases certified by their manufacturer to be traceable to National Bureau of Standards reference gases shall be used whenever these reference gases are available. The span and zero gas mixtures shall be the same composition as specified in Appendix B of this part. Every six months from date of manufacture, span and zero gases shall be reanalyzed by conducting triplicate analyses with Reference Methods 6 for SO_2, 7 for NO_x, and 3 for O_2 and CO_2, respectively. The gases may be analyzed at less frequent intervals if longer shelf lives are guaranteed by the manufacturer.

9.4.2 For non-extractive continuous monitoring systems measuring gases, minimum procedures shall include upscale check(s) using a certified calibration gas cell or test cell which is functionally equivalent to a known gas concentration. The zero check may be performed by computing the zero value from upscale measurements or by mechanically producing a zero condition.

9.4.3 For continuous monitoring systems measuring opacity of emissions, minimum procedures shall include a method for producing a simulated zero opacity condition and an upscale (span) opacity condition using a certified neutral density filter or other related technique to produce a known obscuration of the light beam. Such procedures shall provide a system check of the analyzer internal optical surfaces and all electronic circuitry including the lamp and photodetector assembly.

9.5 Except for system breakdowns, repairs, calibration checks, and zero and span adjustments required under paragraph 9.4 of this section, all continuous monitoring systems shall be in continuous operation and shall meet minimum frequency of operation requirements as follows:

9.5.1 All continuous monitoring systems referenced by paragraphs 9.3.1 and 9.3.2 of this section, for measuring opacity of emissions, shall complete a minimum of one cycle of operation (sampling, analyzing and data recording) for each successive 10-second period.

9.5.2 All continuous monitoring systems referenced by paragraph 9.3.1 of this section for measuring oxides of nitrogen, sulfur dioxide, carbon dioxide, or oxygen shall complete a minimum of one cycle of operation (sampling, analyzing, and data recording) for each successive 15-minute period.

9.5.3 All continuous monitoring systems referenced by paragraph 9.3.2 of this section, except opacity, shall complete a minimum of one cycle of operation (sampling, analyzing, and data recording) for each successive one-hour period.

9.6 All continuous monitoring systems or monitoring devices shall be installed such that representative measurements of emissions or process parameters from the affected facility are obtained. Additional procedures for location of continuous monitoring systems contained in the applicable Performance Specifications of Appendix B of this part shall be used.

9.7 When the effluents from a single affected facility or two or more affected facilities subject to the same emission standards are combined before being released to the atmosphere, the owner or operator may install applicable continuous monitoring systems on each effluent or on the combined effluent. When the affected facilities are not subject to the same emission standards, separate continuous monitoring systems shall be installed on each effluent. When the effluent from one affected facility is released to the atmosphere through more than one point, the owner or operator shall install applicable continuous monitoring systems on each separate effluent unless the installation of fewer systems is approved by the Commissioner.

9.8 Owners or operators of all continuous monitoring systems for measurement of opacity shall reduce all data to six-minute averages and for systems other than opacity to one-hour averages for time periods. Six-minute opacity averages shall be calculated from 24 or more data points equally spaced over each six-minute period. For systems other than opacity, one-hour averages shall be computed from four or more data points equally spaced over each one-hour period. Data recorded during periods of system breakdowns, repairs, calibration checks, and zero and span adjustments shall not be included in the data averages computed under this paragraph. An arithmetic or integrated average of all data may be used. The data output of all continuous monitoring systems may be recorded in reduced or nonreduced form (e.g., ppm pollutant and percent O_2 or lb/million BTU of pollutant). All excess emissions shall be converted into units of the standard using the applicable conversion procedures specified in subparts. After conversion into units of the standard, the data may be rounded to the same number of significant digits used in subparts to specify the applicable standard (e.g., rounded to the nearest one percent opacity).

9.8.1 Upon written application by an owner or operator, the Commissioner may approve alternatives to any monitoring procedures or requirements of this part including, but not limited to the following:

(i) Alternative monitoring requirements when installation of a continuous monitoring system or monitoring device specified by this part would not provide accurate measurements due to liquid water or other interferences caused by substances with the effluent gases.

(ii) Alternative monitoring requirements when the affected facility is infrequently operated.

(iii) Alternative monitoring requirements to accommodate continuous monitoring systems that require additional measurements to correct for stack moisture conditions.

(iv) Alternative locations for installing continuous monitoring systems or monitoring devices when the owner or operator can demonstrate that installation at alternate locations will enable accurate and representative measurements.

(v) Alternative methods of converting pollutant concentration measurements to units of the standards.

(vi) Alternative procedures for performing daily checks of zero and span drift that do not involve use of span gases or test cells.

(vii) Alternatives to the A.S.T.M. test methods or sampling procedures specified by any subpart.

(viii)Alternative continuous monitoring systems that do not meet the design or performance requirements in Performance Specification 1, Appendix B, but adequately demonstrate a definite and consistent relationship between its measurements and the measurements of opacity by a system complying with the requirements in Performance Specification 1. The Commissioner may require that such demonstration be performed for each affected facility.

(ix) Alternative monitoring requirements when the effluent from a single affected facility or the combined effluent from two or more affected facilities are released to the atmosphere through more than one point.

10.0 Fossil Fuel-Fired Steam Generators

10.1 Emission and Fuel Monitoring. A continuous monitoring system for measuring sulfur dioxide emissions, shall be installed, calibrated, maintained and operated by the owner or operator except where gaseous fuel is burned or where low sulfur fuels are used to achieve compliance with the sulfur emission standard and fuel analysis. The following procedures shall be used for monitoring sulfur dioxide emissions:

10.1.1 For affected facilties which use continuous monitoring systems, Reference Method 6 shall be used for conducting monitoring system performance evaluations under 9.3. The pollutant gas used to prepare calibration gas mixtures under paragraph 2.1, Performance Specification 2 and for calibration checks under 9.4 to this part, shall be sulfur dioxide (SO_2). The span value for the continuous monitoring system shall be determined as follows:

(i) For affected facilities firing liquid fossil fuel, the span value shall be 1000 ppm sulfur dioxide.

(ii) For affected facilities firing solid fossil fuel, the span value shall be 1500 ppm sulfur dioxide.

(iii) For affected facilities firing fossil fuels in any combination, the span value shall be determined by computation in accordance with the following formula and rounding to the nearest 500 ppm sulfur dioxide:

$$1000y + 1500z$$

where:

y = the fraction of total heat input derived from liquid fossil fuel and

z = the fraction of total heat input derived from solid fossil fuel.

(iv) For affected facilities which fire both fossil fuels and non-fossil fuels, the span value shall be subject to the Commissioner's approval.

10.1.2 Reserved.

10.1.3 For affected facilities using flue gas desulfurization systems to achieve compliance with sulfur dioxide standards, the continuous monitoring system for measuring sulfur dioxide emissions shall be located downstream of the desulfurization system and in accordance with requirements in Performance Specification 2 of Appendix B and the following:

(i) Owners or operators shall install CO_2 continuous monitoring systems, if selected under paragraph 10.3 of this section, at a location upstream of the desulfurization system. This option may be used only if the owner or operator can demonstrate that air is not added to the flue gas between the CO_2 continuous monitoring system and the SO_2 continuous monitoring system and each system measures the CO_2 and SO_2 on a dry basis.

(ii) Owners or operators who install O_2 continuous monitoring systems under paragraph 10.3 of this section shall select a location downstream of the desulfurization system and all measurements shall be made on a dry basis.

(iii) If fuel of a different type than is used in the boiler is fired directly into the flue gas for any purpose (e.g., reheating) the F or F_c factors used shall be prorated under paragraph 10.5.6 of this section with consideration given to the faction of total heat input supplied by the additional fuel. The pollutant, opacity, CO_2 or O_2 continuous monitoring system(s) shall be installed downstream of any location at which fuel is fired directly into the flue gas.

10.2 A continuous monitoring system for the measurement of nitrogen oxides emissions shall be installed, calibrated, maintained, and operated by the owner or operator except for any affected facility demonstrated during performance tests to emit nitrogen oxides pollutants at levels 30 percent or more below applicable standards. The following procedures shall be used for determining the span and for calibrating nitrogen oxides continuous monitoring systems:

10.2.1 The span value shall be determined as follows:

(i) For affected facilities firing gaseous fossil fuel, the span value shall be 500 ppm nitrogen oxides.

(ii) For affected facilities firing liquid fossil fuel, the span value shall be 500 ppm nitrogen oxides.

(iii) For affected facilities firing solid fossil fuel, the span value shall be 1000 ppm nitrogen oxides.

(iv) For affected facilities firing fossil fuels in any combination, the span value shall be determined by computation in accordance with the following formula and rounding to the nearest 500 ppm nitrogen oxides:

$$500\ (x + y) + 1000z$$

where:

x = the fraction of total heat input derived from gaseous fossil fuel.

y = the fraction of total heat input derived from liquid fossil fuel, and

z = the fraction of total heat input derived from solid fossil fuel.

(v) For affected facilities which fire both fossil fuels and non-fossil fuels, the span value shall be subject to the Commissioner's approval.

10.2.2 The pollutant gas used to prepare calibration gas mixtures under paragraph 2.1, Performance Specification 2 and for calibration checks under paragraph 9.4, shall be nitric oxide (NO). Reference Method 7 shall be used for conducting monitoring system performance evaluations under paragraph 9.3.

10.3 A continuous monitoring system for measuring either oxygen or carbon dioxide in the flue gases shall be installed, calibrated, maintained, and operated by the owner or operator.

10.4 An owner or operator required to install continuous monitoring systems under paragraphs 10.1 and 10.2 of this section shall for each pollutant monitored use the applicable conversion procedure for the purpose of converting continuous monitoring data into units of the applicable standards lb/million BTU as follows:

10.4.1 When the owner or operator elects under paragraph 10.3 of this section to measure oxygen in the flue gases, the measurement of the pollutant concentration and oxygen concentration shall each be on a dry basis and the following conversion procedure shall be used:

$$E = CF \left[\frac{20.9}{20.9 - \%O_2} \right]$$

where:

E, C, F and $\%O_2$ are determined under paragraph 10.5 of this section.

10.4.2 When the owner or operator elects under paragraph 10.3 of this section to measure carbon dioxide in the flue gases, the measurement of the pollutant concentration and the carbon dioxide concentration shall be on a consistent basis (wet or dry) and the following conversion procedure shall be used:

$$E = CF_c \left[\frac{100}{\%CO_2} \right]$$

where:

E, C, F_c, and $\%CO_2$ are determined under paragraph 10.5 of this section.

10.5 The values used in the equations under paragraphs 10.4.1 and 10.4.2 of this section are derived as follows:

10.5.1 E = pollutant emission, (lb/million BTU).

10.5.2 C = pollutant concentration, (lb/dscf), determined by multiplying the average concentration (ppm) for each one-hour period by 2.59×10^{-9} M lb/dscf per ppm where M = pollutant molecular weight, lb/lb-mole M - 64.07 for sulfur dioxide and 46.01 for nitrogen oxides.

10.5.3 $\%O_2$, $\%CO_2$ = oxygen or carbon dioxide volume (expressed as percent), determined with equipment specified under paragraph 10.3 of this section.

10.5.4 F, F_c = a factor representing a ratio of the volume of dry flue gases generated to the calorific value of the fuel combusted (F), and a factor representing a ratio of the volume of carbon dioxide generated to the calorific value of the fuel combusted (F_c), respectively. Values of F and F_c are given as follows:

(i) For anthracite coal as classified according to A.S.T.M. D388-66, F = 1.139 dscm/million cal (10140 dscf/million BTU) and F_c = 0.222 scm CO_2/million cal (1980 scf CO_2/million BTU).

(ii) For sub-bituminous and bituminous coal as classified according to A.S.T.M. D388-66, F = 1.103 dscm/million cal (9820 dscf/million BTU) and F_c = 0.203 scm CO_2/million cal (1810 scf CO_2/million BTU).

(iii) For liquid fossil fuels including crude, residual, and distillate oils, F = 1.036 dscm/million cal (9220 dscf/million BTU) and F_c = 0.161 scm CO_2/million cal (1430 scf CO_2/million BTU).

(iv) For gaseous fossil fuels, F = 0.982 dscm/million cal (8740 dscf/million BTU). For natural gas, propane, and butane fuels, F_c = 0.117 scm CO_2/million cal (1040 scf CO_2/million BTU) for natural gas, 0.135 scm CO_2/million cal (1200 scf CO_2/million BTU) for propane, and 0.142 scm CO_2/million cal (1260 scf CO_2/million BTU) for butane.

10.5.5 The owner or operator may use the following equation to determine an F factor dscf/million BTU on a dry basis (if it is desired to calculate F on a wet basis, consult with the Commissioner) or F_c factor scf CO_2/million BTU) on either basis in lieu of the F or F_c factors specified in paragraph 10.5.4 of this section:

$$F = \frac{227.0\%H+95.7\%C+35.4\%S+8.6\%N-28.5\%O}{GCV} \qquad \text{(metric units)}$$

$$F = \frac{10^6\ [6.34\%H+1.53\%C+0.57\%S+0.14\%N-0.46\%O]}{GCV} \qquad \text{(English units)}$$

$$F_c = \frac{20.0\%C}{GCV} \qquad \text{(metric units)}$$

$$F_c = \frac{321 \text{ X } 10^3\%C}{GCV} \qquad \text{(English units)}$$

(i) H, C, S, N and O are content by weight of hydrogen, carbon, sulfur, nitrogen, and oxygen (expressed as percent), respectively, as determined on the same basis as GCV by ultimate analysis of the fuel fired, using A.S.T.M. method D3178-74 or D3176 (solid fuels), or computed from results using A.S.T.M. methods D1137-53(70), D1945-64(73), or D1946-67(72) gaseous fuels) as applicable.

(ii) GCV is the gross calorific value (cal/g, BTU/lb) of the fuel combusted, determined by the A.S.T.M. test methods D2015-66(72) for solid fuels and D1826-64(70) for gaseous fuels as applicable.

10.5.6 For affected facilities firing combinations of fossil fuels, the F or F_c factors determined by paragraphs 10.5.4 or 10.5.5 of this section shall be prorated in accordance with the applicable formula as follows:

(i) $F = xF_1 + yF_2 + zF_3$

where:

x, y, z = the fraction of total heat input derived from gaseous, liquid, and solid fuel, respectively.

F_1, F_2, F_3 = the value of F for gaseous liquid, and solid fossil fuels respectively under paragraphs 10.5.4 or 10.5.5 of this section.

(ii) $$F_c = \sum_{i=1}^{n} X_i (F_c)_i$$

where:

X_i = the fraction of total heat input derived from each type fuel (e.g., natural gas, butane, crude, bituminous coal, etc.).

$(F_c)_i$ = the applicable F_c factor for each fuel type determined in accordance with paragraphs 10.5.4 and 10.5.5 of this section.

(iii) For affected facilities which fire both fossil fuels and non-fossil fuels, the F or F_c value shall be subject to the Commissioner's approval.

10.6 For the purpose of reports required under section 8, periods of excess emissions that shall be reported are defined as follows:

10.6.1 Reserved.

10.6.2 Sulfur dioxide, excess emissions for affected facilities are defined as:

(i) Any three-hour period during which the average emissions (arithmetic average of three contiguous one-hour periods) of sulfur dioxide as measured by a continuous monitoring system exceed the applicable standard.

(ii) Reserved.

10.6.3 Nitrogen oxides. Excess emissions for affected facilities using a continuous monitoring system for measuring nitrogen oxides are defined as any three-hour period during which the average emissions (arithmetic average of three contiguous one-hour periods) exceed the applicable standards.

11.0 Nitric Acid Plants.

11.1 Emission Monitoring.

11.1.1 A continuous monitoring system for the measurement of nitrogen oxides shall be installed, calibrated, maintained, and operated by the owner or operator. The pollutant gas used to prepare calibration gas mixtures under paragraph 2.1, Performance Specification 2 and for calibration checks under paragraph 9.4 to this part, shall be nitrogen dioxide (NO_2). The span shall be set at 500 ppm of nitrogen dioxide. Reference Method 7 shall be used for conducting monitoring system performance evaluations under paragraph 9.3.

11.1.2 The owner or operator shall establish a conversion factor for the purpose of converting monitoring data into units of the applicable standard (lb/short ton). The conversion factor shall be established by measuring emissions with the continuous monitoring system concurrent with measuring emissions with the applicable reference method tests. Using only that portion of the continuous monitoring emission data that represents emission measurements concurrent with the reference method test periods, the conversion factor shall be determined by dividing the reference method test data averages by the monitoring data averages to obtain a ratio expressed in units of the applicable standard to units of the monitoring data, i.e., lb/short ton per ppm. The conversion factor shall be reestablished during any performance test under Regulation 14.1.11 or any continuous monitoring system performance evaluation under paragraph 9.3.

11.1.3 The owner or operator shall record the daily production rate and hours of operation.

12.0 Emission Monitoring.

12.1 A continuous monitoring system for the measurement of sulfur dioxide shall be installed, calibrated, maintained, and operated by the owner or operator. The pollutant gas used to prepare calibration gas mixtures under paragraph 2.1, Performance Specification 2 and for calibration checks under paragraph 9.4 to this part, shall be sulfur dioxide (SO_2). Reference Method 8 shall be used for conducting monitoring system performance evaluations under paragraph 9.3 except that only the sulfur dioxide portion of the Method 8 results shall be used. The span shall be set at 1000 ppm of sulfur dioxide.

12.2 The owner or operator shall establish a conversion factor for the purpose of converting monitoring data into units of the applicable standard (lb/short ton). The conversion factor shall be determined, as a minimum, three times daily by measuring the concentration of sulfur dioxide entering the converter using suitable methods (e.g., the Reich test, National Air Pollution Control Administration Publication No. 999-AP-13) and calculating the appropriate conversion factor for each eight-hour period as follows:

$$CF = k \left[\frac{1{,}000 - 0.015r}{r - s} \right]$$

where:

CF = conversion factor lb/short ton per ppm.

k = constant derived from material balance for determining CF in English units, k = 0.1366.

r = percentage of sulfur dioxide by volume entering the gas converter. Appropriate corrections must be made for air injection plants subject to the Commissioner's approval.

s = percentage of sulfur dioxide by volume in the emissions to the atmosphere determined by the continuous monitoring system required under paragraph 11.1 of this section.

12.3 The owner or operator shall record all conversion factors and values under paragraph 11.2 of this section from which they were computed (i.e., CF, r, and s).

12.4 Reserved.

12.5 For the purpose of reports under paragraph 8.0, periods of excess emissions shall be all three-hour periods (or the arithmetic average of three consecutive one-hour periods) during which the integrated average sulfur dioxide emissions exceed the applicable standards.

13.0 Petroleum Refineries.

13.1 Continuous monitoring systems shall be installed, calibrated, maintained, and operated by the owner or operator as follows:

13.1.1 A continuous monitoring system for the measurement of the opacity of emissions discharged into the atmosphere from the fluid catalytic cracking unit catalyst regenerator. The continuous monitoring system shall be spanned at 60, 70 or 80 percent opacity.

13.1.2 Reserved.

13.1.3 A continuous monitoring system for the measurement of sulfur dioxide in the gases discharged into the atmosphere from the combustion of fuel gases (except where a continuous monitoring system for the measurement of hydrogen sulfide is installed under paragraph 13.1.4 of this section). The pollutant gas used to prepare calibration gas mixtures under paragraph 2.1, Performance Specification 2 and for calibration checks under paragraph 9.4 of this part, shall be sulfur dioxide (SO_2). The span shall be set at 100 ppm. For conducting monitoring system performance evaluations under paragraph 9.3, Reference Method 6 shall be used.

13.1.4 Reserved.

13.2 Reserved.

13.3 For the purpose of reports under paragraph 8, periods of excess emissions that shall be reported are defined as follows:

13.3.1 Reserved.

13.3.2 Reserved.

13.3.3 Reserved.

13.3.4 Any six-hour period during which the average emissions (arithmetic average of six continuous one-hour periods) of sulfur dioxide as measured by a continuous monitoring system exceed the standard.

14.0 Other Facilities. Nothing in this guide should be construed as limiting the authority of the Commissioner to require continuous monitoring of pollutants by other industries or specific facilities including both New Source and Non New Source Facilities, in accord with Regulation 13.

Performance Specifications for New Source or Non New Source Facilities

Performance Specification 1 - Performance specifications and specification test procedures for transmissometer systems for continuous measurement of the opacity of stack emissions.

1. Principle and Applicability.

1.1 Principle. The opacity of particulate matter in stack emissions is measured by a continuously operating emission measurement system. These systems are based upon the principle of transmissometry which is a direct measurement of the attenuation of visible radiation (opacity) by particulate matter in a stack effluent. Light having specific spectral characteristics is projected from a lamp across the stack of a pollutant source to a light sensor. The light is attenuated due to absorption and scatter by the particulate matter in the effluent. The percentage of visible light attenuated is defined as the opacity of the emission. Transparent stack emissions that do not attenuate light will have a transmittance of 100 or an opacity of 0. Opaque stack emissions that attenuate all of the visible light will have a transmittance of 0 or an opacity of 100 percent. The transmissometer is evaluated by use of neutral density filters to determine the precision of the continuous monitoring system. Tests of the system are performed to determine zero drift, calibration drift, and response time characteristics of the system.

1.2 Applicability. This performance specification is applicable to the continuous monitoring systems specified in the subparts for measuring opacity of emissions. Specifications for continuous measurement of visible emissions are given in terms of design, performance, and installation parameters. These specifications contain test procedures, installation requirements, and data computation procedures for evaluating the acceptability of the continuous monitoring systems subject to approval by the Commissioner.

2. Apparatus.

2.1 Calibrated Filters. Optical filters with neutral spectral characteristics and known optical densities to visible light or screens known to produce specified optical densities. Calibrated filters with accuracies certified by the manufacturer to within ±3 percent opacity shall be used. Filters required are low, mid, and high-range filters with nominal densities as follows when the transmissometer is spanned at opacity levels specified by applicable subparts:

Span value (percent opacity)	Calibrated filter optical densities with equivalent opacity in parenthesis		
	Low-range	Mid-range	High-range
50................	0.1 (20)	0.2 (37)	0.3 (50)
60................	.1 (20)	.2 (20)	.3 (50)
70................	.1 (20)	.3 (50)	.4 (60)
80................	.1 (20)	.3 (50)	.6 (75)
90................	.1 (20)	.4 (60)	.7 (80)
100...............	.1 (20)	.4 (60)	.9 (87)

It is recommended that filter calibrations be checked with a well-collimated photopic transmissometer of known linearity prior to use. The filters shall be of sufficient size to attenuate the entire light beam of the transmissometer.

2.2 Data Recorder. Analog chart recorder or other suitable device with input voltage range compatible with the analyzer system output. The resolution of the recorder's data output shall be sufficient to allow completion of the test procedures within this specification.

2.3 Opacity Measurement System. An in-stack transmissometer (folded or single path) with the optical design specifications designed below, associated control units and apparatus to keep optical surfaces clean.

3. Definitions.

3.1 Continuous Monitoring System. The total equipment required for the determination of pollutant opacity in a source effluent. Continuous monitoring systems consist of major subsystems as follows:

3.1.1 Sampling Interface. The portion of a continuous monitoring system for opacity that protects the analyzer from the effluent.

3.1.2 Analyzer. That portion of the continuous monitoring system which senses the pollutant and generates a signal output that is a function of the pollutant opacity.

3.1.3 Data Recorder. That portion of the continuous monitoring system that processes the analyzer output and provides a permanent record of the output signal in terms of pollutant opacity.

3.2 Transmissometer. The portions of a continuous monitoring system for opacity that include the sampling interface and the analyzer.

3.3 Span. The value of opacity at which the continuous monitoring system is set to produce the maximum data display output. The span shall be set at an opacity specified in each applicable subpart.

3.4 Calibration Error. The difference between the opacity reading indicated by the continuous monitoring system and the known values of a series of test standards. For this method the test standards are a series of calibrated optical filters or screens.

3.5 Zero Drift. The change in continuous monitoring system output over a stated period of time of normal continuous operation when the pollutant concentration at the time of the measurements is zero.

3.6 Calibration Drift. The change in the continuous monitoring system output over a stated period of time of normal continuous operation when the pollutant concentration at the time of the measurements is the same known upscale value.

3.7 System Response. The time interval from a step change in opacity in the stack at the input to the continuous monitoring system to the time at which 95 percent of the corresponding final value is reached as displayed on the continuous monitoring system data recorder.

3.8 Operational Test Period. A minimum period of time over which a continuous monitoring system is expected to operate within certain performance specifications without unscheduled maintenance, repair, or adjustment.

3.9 Transmittance. The fraction of incident light that is transmitted through an optical medium of interest.

3.10 Opacity. The fraction of incident light that is attenuated by an optical medium of interest. Opacity (O) and transmittance (T) are related as follows:

$$O = 1 - T$$

3.11 Optical Density. A logarithmic measure of the amount of light that is attenuated by an optical medium of interest. Optical density (D) is related to the transmittance and opacity as follows:

$$D = -\log_{10} T$$

$$D = -\log_{10} (1-O)$$

3.12 Peak Optical Response. The wavelength of maximum sensitivity of the instrument.

3.13 Mean Spectral Response. The wavelength which bisects the total area under the curve obtained pursuant to paragraph 9.2.1.

3.14 Angle of View. The maximum (total) angle of radiation detection by the photodetector assembly of the analyzer.

3.15 Angle of Projection. The maximum (total) angle that contains 95 percent of the radiation projected from the lamp assembly of the analyzer.

3.16 Pathlength. The depth of effluent in the light beam between the receiver and the transmitter of the single-pass transmissometer, or the depth of effluent between the transceiver and reflector of a double-pass transmissometer. Two pathlengths are referenced by this specification:

3.16.1 Monitor Pathlength. The depth of effluent at the installed location of the continuous monitoring system.

3.16.2 Emission Outlet Pathlength. The depth of effluent at the location emissions are released to the atmosphere.

4. Installation Specification.

4.1 Location. The transmissometer must be located across a section of duct or stack that will provide a particulate matter flow through the optical volume of the transmissometer that is representative of the particulate matter flow through the duct or stack. It is recommended that the monitor pathlength or depth of effluent for the transmissometer include the entire diameter of the duct or stack. In installations using a shorter pathlength, extra caution must be used in determining the measurement location representative of the particulate matter flow through the duct or stack.

4.1.1 The transmissometer location shall be downstream from all particulate control equipment.

4.1.2 The transmissometer shall be located as far from bends and obstructions as practical.

4.1.3 A transmissometer that is located in the duct or stack following a bend shall be installed in the plane defined by the bend where possible.

4.1.4 The transmissometer should be installed in an accessible location.

4.1.5 When required by the Commissioner, the owner or operator of a source must demonstrate that the transmissometer is located in a section of duct or stack where a representative particulate matter distribution exists. The determination shall be accomplished by examining the opacity profile of the effluent at a series of positions across the duct or stack while the plant is in operation at a maximum or reduced operating rates or by other tests acceptable to the Commissioner.

4.2 Slotted Tube. Installations that require the use of a slotted tube shall use a slotted tube of sufficient size and blackness so as not to interfere with the free flow of effluent through the entire optical volume of the transmissometer or reflect light into the transmissometer photodetector. Light reflections may be prevented by using blackened baffles within the slotted tube to prevent the lamp radiation from impinging upon the tube walls, bv restricting the angle of projection of the light and the angle of view of the photodector assembly to less than the cross-sectional area of the slotted tube, or by other methods. The owner or operator must show that the manufacturer of the monitoring system has used appropriate methods to minimize light reflections for systems using slotted tubes.

4.3 Data Recorder Output. The continuous monitoring system output shall permit expanded display of the span opacity on a standard 0 to 100 percent scale. Since all opacity standards are based on the opacity of the effluent exhausted to the atmosphere; the system output shall be based upon the emission outlet wavelength and permanently recorded. For affected facilities whose monitor pathlength is different from the facility's emission outlet pathlength, a graph shall be provided with the installation to show the relationships between the continuous monitoring system recorded opacity based upon the emission outlet pathlength and the opacity of the effluent at the analyzer location (monitor pathlength). Tests for measurement of opacity that are required by this performance specification are based upon the monitor pathlength. The graph necessary to convert the data recorder output to the monitor pathlength basis shall be established as follows:

$$\log (1-0_2) = (1_1/1_2 \log (1-0_2))$$

where:

0_1 = the opacity of the effluent based upon 1_1.

0_2 = the opacity of the effluent based upon 1_2.

1_1 = the emission outlet pathlength.

1_2 = the monitor pathlength.

c. Optical Design Specifications. The optical design specifications set forth in Section 6.1 shall be met in order for a measurement system to comply with the requirements of this method.

6. Determination of Conformance with Design Specifications.

6.1 The continuous monitoring system for measurement of opacity shall be demonstrated to conform to the design specifications set forth as follows:

6.1.1 Peak Spectral Response. The peak spectral response of the continuous monitoring systems shall occur between 500 nm and 600 nm. Response at any wavelength below 400 nm or above 700 nm shall be less than 10 percent of the peak response of the continuous monitoring system.

6.1.2 Mean Spectral Response. The mean spectral response of the continuous monitoring system shall occur between 500 nm and 600 nm.

6.1.3 Angle of View. The total angle of view shall be no greater than 5 degrees.

6.1.4 Angle of Projection. The total angle of projection shall be no greater than 5 degrees.

6.2 Conformance with requirements under Section 6.1 of this specification may be demonstrated by the owner or operator of the affected facility or by the manufacturer of the opacity measurement system. Where conformance is demonstrated by the manufacturer, certification that the tests were performed, a description of the test procedures, and the test results shall be provided by the manufacturer. If the source owner or operator demonstrates conformance, the procedures used and results obtained shall be reported.

6.3 The general test procedures to be followed to demonstrate conformance with Section 6 requirements are given as follows: (These procedures will not be applicable to all designs and will require modification in some cases. Where analyzer and optical design is certified by the manufacturer to conform with the angle of view or angle of projection specifications, the respective procedures may be omitted).

6.3.1 Spectral Response. Obtain spectral data for detector, lamp, and filter components used in the measurement system from their respective manufacturers.

6.3.2 Angle of View. Set the receiver up as specified by the manufacturer. Draw an arc with radius of 3 meters. Measure the receiver response to a small (less than 3 centimeters) non-directional light source at 5-centimeter intervals on the arc for 26 centimeters on either side of the detector centerline. Repeat the test in the vertical direction.

6.3.3 Angle of Projection. Set the projector up as specified by the manufacturer. Draw an arc with radius of 3 meters. Using a small photoelectric light detector (less than 3 centimeters), measure the light intensity at 5-centimeter intervals on the arc for 26 centimeters on either side of the light source centerline of projection. Repeat the test in the vertical direction.

7. Continuous Monitoring System Performance Specifications. The continuous monitoring system shall meet the performance specifications in Table 1-1 to be considered acceptable under this method.

TABLE 1-1 - Performance Specifications

Parameter	Specifications
a. Calibration error	≤3 pct opacity.[1]
b. Zero drift (24 h)	≤2 pct opacity.[1]
c. Calibration drift (24 h)	≤2 pct opacity.[1]
d. Response time	10 s (maximum).
e. Operational test period	168h.

([1] Expressed as sum of absolute mean value and the 95 pct confidence interval of a series of tests).

8. Performance Specification Test Procedures. The following test procedures shall be used to determine conformance with the requirements of paragraph 7:

8.1 Calibration Error and Response Time Test. These tests are to be performed prior to installation of the system on the stack and may be performed at the affected facility or at other locations provided that proper notification is given. Set up and calibrate the measurement system as specified by the manufacturer's written instructions for the monitor pathlength to be used in the installation. Span the analyzer as specified in applicable subparts.

8.1.1 Calibration Error Test. Insert a series of calibration filters in the transmissometer path at the midpoint. A minimum of three calibration filters (low, mid, and high-range) selected in accordance with the table under paragraph 2.1 and calibrated within 3 percent must be used. Make a total of five nonconsecutive readings for each filter. Record the measurement system output readings in percent opacity. (See Figure 1-1).

8.1.2 System Response Test. Insert the high-range filter in the transmissometer path five times and record the time required for the system to respond to 95 percent of final zero and high-range filter values. (See Figure 1-2).

8.2 Field Test for Zero Drift and Calibration Drift. Install the continuous monitoring system on the affected facility and perform the following alignments:

8.2.1 Preliminary Alignments. As soon as possible after installation and once a year thereafter when the facility is not in operation, perform the following optical and zero alignments:

8.2.1.1 Optical Alignment. Align the light beam from the transmissometer upon the optical surfaces located across the effluent (i.e., the retroflector or photodetector as applicable) in accordance with the manufacturer's instructions.

8.2.1.2 Zero Alignment. After the transmissometer has been optically aligned and the transmissometer mounting is mechanically stable (i.e., no movement of the mounting due to thermal contraction of the stack, duct, etc.) and a clean stack condition has been determined by a steady zero opacity condition, perform the zero alignment. This alignment is performed by balancing the continuous monitor system response so that any simulated zero check coincides with an actual zero check performed across the monitor pathlength of the clean stack.

8.2.1.3 Span. Span the continuous monitoring system at the opacity specified in subparts and offset the zero setting at least 10 percent of span so that negative drift can be quantified.

8.2.2 Final Alignments. After the preliminary alignments have been completed and the affected facility has been started up and reaches normal operating temperature, recheck the optical alignment in accordance with 8.2.1.1 of this specification. If the alignment has shifted, realign the optics, record any detectable shift in the opacity measured by the system that can be attributed to the optical realignment, and notify the Commissioner. This condition may not be objectionable if the affected facility operates within a fairly constant and adequately narrow range of operating temperatures that does not produce significant shifts in optical alignment during normal operation of the facility. Under circumstances where the facility operations produce fluctuations in the effluent gas temperature that result in significant misalignments, the Commissioner may require improved mounting structures or another location for installation of the transmissometer.

8.2.3 Conditioning Period. After completing the post-startup alignments, operate the system for an initial 168-hour conditioning period in a normal operational manner.

8.2.4 Operational Test Period. After completing the conditioning period, operate the system for an additional 168-hour period retaining the zero offset. The system shall monitor the source effluent at all times except when being zeroed or calibrated. At 24-hour intervals the zero and span shall be checked according to the manufacturer's instructions. Minimum procedures used shall provide a system check of the analyzer internal mirrors and all electronic circuitry including the lamp and photodetector assembly and shall include a procedure for producing a simulated zero opacity condition and a simulated upscale (span) opacity condition as viewed by the receiver. The manufacturer's written instructions may be used providing that equal or exceed these minimum procedures. Zero and span the transmissometer, clean all optical surfaces exposed to the effluent, realign optics, and make any necessary adjustments to the calibration of the system daily. These zero and calibration adjustments and optical realignments are allowed only at 24-hour intervals or at such shorter intervals as the manufacturer's written instructions specify. Automatic corrections made by the measurement system without operator intervention are allowable at any time. The magnitude of any zero or span drift adjustments shall be recorded. During this 168-hour operational test period, record the following at 24-hour intervals: (a) the zero reading and span readings after the system is calibrated (these readings should be set at the same value at the beginning of each 24-hour period): (b) the zero reading after each 24 hours of operation, but before cleaning and adjustment: and (c) the span reading after cleaning and zero adjustment, but before span adjustment. (See Figure 1-3).

9. Calculation. Data Analysis, and Reporting.

9.1 Procedure for Determination of Mean Values and Confidence Intervals.

9.1.1 The mean value of the data set is calculated according to equation 1-1.

$$\bar{X} = \frac{1}{n} \sum_{i=1}^{n} X_i \qquad \text{Equation 1-1}$$

where X_i = absolute value of the individual measurements,

Σ = sum of the individual values.

X = mean value, and

n = number of data points.

9.1.2 The 95 percent confidence interval (two-sided) is calculated according to equation 1-2.

$$C.I._{95} = \frac{t_{.975}}{n\sqrt{n-1}} \sqrt{n(\Sigma X_i^2)-(\Sigma X_i)^2} \qquad \text{Equation 1-2}$$

where:

ΣX_i = sum of all data points,

$t_{.975} = t_1-\alpha/2$, and

$C.I._{95}$ = 95 percent confidence interval estimate of the average mean value.

Values for $t_{.975}$

n	$t_{.975}$	n	$t_{.975}$
2	12.706	10	2.262
3	4.303	11	2.228
4	3.182	12	2.201
5	2.776	13	2.179
6	2.571	14	2.160
7	2.447	15	2.145
8	2.365	16	2.131
9	2.306		

The values in this table are already corrected for n-1 degrees of freedom. Use n equal to the number of samples as data points.

9.2 Data Analysis and Reporting.

9.2.1. Spectral Response. Combine the spectral data obtained in accordance with paragraph 6.3.1 to develop the effective spectral response curve of the transmissometer. Report the wavelength at which the peak response occurs, the wavelength at which the mean response occurs, and the maximum response at any wavelength below 400 nm and above 700 nm expressed as a percentage of the peak response as required under paragraph 6.2.

9.2.2 Angle of View. Using the data obtained in accordance with paragraph 6.3.2 calculate the response of the receiver as a function of viewing angle in the horizontal and vertical directions (26 centimeters of arc with a radius of 3 meters equal 5 degrees). Report relative angle of view curves as required under paragraph 6.2.

9.2.3 Angle of Projection. Using the data obtained in accordance with paragraph 6.2.3, calculate the response of the photoelectric detector as a function of projection angle in the horizontal and vertical directions. Report relative angle of projection curves as required under paragraph 6.2.

9.2.4 Calibration Error. Using the data from paragraph 8.1 (Figure 1-1), subtract the known filter opacity value from the value shown by the measurement system for each of the 15 readings. Calculate the mean and 95 percent confidence interval of the five different values at each test filter value according to equations 1-1 and 1-2. Report the sum of the absolute mean difference and the 95 percent confidence interval for each of the three test filters.

9.2.5 Zero Drift. Using the zero opacity values measured every 24 hours during the field test (paragraph 8.2), calculate the difference between the zero point after cleaning, aligning, and adjustment and the zero value 24 hours later just prior to cleaning, aligning, and adjustment. Calculate the mean value of these points and the confidence interval using equations 1-1 and 1-2. Report the sum of the absolute mean value and the 95 percent confidence interval.

9.2.6 Calibration Drift. Using the span value measured every 24 hours during the field test, calculate the differences between the span value after cleaning, aligning and adjustment of zero and span, and the span value 24 hours later just after cleaning, aligning, and adjustment of zero and before adjustment of span. Calculate the mean value of these points and the confidence interval using equations 1-1 and 1-2. Report the sum of the absolute mean value and the confidence interval.

9.2.7 Response Time. Using the data from paragraph 8.1, calculate the time interval from filter insertion of 95 percent of the final stable value for all upscale and downscale traverses. Report the mean of the 10 upscale and downscale test times.

9.2.8 Operational Test Period. During the 168-hour operational test period, the continuous monitoring system shall not require any corrective maintenance, repair, replacement or adjustment other than that clearly specified as required in the manufacturer's operation and maintenance manuals as routine and expected during a one-week period. If the continuous monitoring system is operated within the specified performance parameters and does not require corrective maintenance, repair, replacement or adjustment other than as specified above during the 168-hour test period, the operational test period shall have been successfully concluded. Failure of the continuous monitoring system to meet these requirements shall call for a repetition of the 168-hour test period. Portions of the tests which were satisfactorily completed need not be repeated. Failure to meet any performance specification(s) shall call for a repetition of the one-week operational test period and that specific portion of the tests required by paragraph 8 related to demonstrating compliance with the failed specification. All maintenance and adjustments required shall be recorded. Output readings shall be recorded before and after all adjustments.

10. References.

10.1 "Experimental Statistics," Department of Commerce, National Bureau of Standards Handbook 91, 1963, pp. 3-31, paragraphs 3-3.1.4.

10.2 "Performance Specifications for Stationary-Source Monitoring Systems for Gases and Visible Emissions." Environmental Protection Agency, Research Triangle Park, N.C., EPA-650/2-74-013, January 1974.

Calibrated Neutral Density Filter Data
(See paragraph 8.1.1)

Low Range ____% opacity
Span Value ____% opacity
Mid Range ____% opacity
High Range ____% opacity

Date of Test ____________________ Location of Test ____________

	Calibrated Filter[1]	Analyzer Reading % Opacity	Differences[2] % Opacity
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			

	Low	Mid	High
Mean difference	____	____	____
Confidence interval	____	____	____
Calibration error = Mean difference[3] + C.I.	____	____	____

---

[1] Low, mid or high range

[2] Calibration filter opacity - analyzer reading

[3] Absolute value

Figure 1-1. Calibration Error Test

Date of Test ____________ Location of Test ____________

Span Filter ____________________% Opacity

Analyzer Span Setting ______________% Opacity

Upscale 1 ______________ Seconds

2 ______________ Seconds

3 ______________ Seconds

4 ______________ Seconds

5 ______________ Seconds

Downscale 1 ______________ Seconds

2 ______________ Seconds

3 ______________ Seconds

4 ______________ Seconds

5 ______________ Seconds

Average Response ______________ Seconds

Figure 1-2. Response Time Test

Date and Time	Zero Reading (Before cleaning and adjustment)	Zero Drift (ΔZero)	Span Reading (After cleaning and zero adjustment but before span adjustment)	Calibration Drift (ΔSpan)

Zero Drift = Mean Zero Drift* ______________ + CI (Zero) ______________ = ______________.

Calibration Drift = Mean Span Drift* ________ + CI (Span) _________ = __________.

---

*Absolute value

Figure 1-2. Zero and Calibration Drift Test

Performance Specification 2 - Performance specifications and specification test procedures for monitors of SO_2 and NO_x from stationary sources.

1. Principle and Applicability.

1.1 Principle. The concentration of sulfur dioxide or oxides of nitrogen pollutants in stack emissions is measured by a continuously operating emission measurement system. Concurrent with operation of the continuous monitoring system, the pollutant concentrations are also measured with reference methods (Source Sampling Procedures and Test Requirements). An average of the continuous monitoring system data is computed for each reference method testing period and compared to determine the relative accuracy of the continuous monitoring system. Other tests of the continuous monitoring system are also performed to determine calibration error, drift, and response characteristics of the system.

1.2 Applicability. This performance specification is applicable to evaluation of continuous monitoring systems for measurement of nitrogen oxides or sulfur dioxide pollutants. These specifications contain test procedures, installation requirements, and data computation procedures for evaluating the acceptability of the continuous monitoring systems.

2. Apparatus.

2.1 Calibration Gas Mixtures. Mixtures of known concentrations of pollutant gas in a diluent gas shall be prepared. The pollutant gas shall be sulfur dioxide or the appropriate oxide(s) of nitrogen specified by paragraph 6 and within subparts. For sulfur dioxide gas mixtures, the diluent gas may be air or nitrogen. For nitric oxide (NO) gas mixtures, the diluent gas shall be oxygen-free ($\leq$10 ppm) nitrogen, and for nitrogen dioxide (NO_2) gas mixtures the diluent gas shall be air. Concentrations of approximately 50 percent and 90 percent of span are required. The 90 percent gas mixture is used to set and to check the span and is referred to as the span gas.

2.2 Zero Gas. A gas certified by the manufacturer to contain less than 1 ppm of the pollutant gas or ambient air may be used.

2.3 Equipment for measurement of the pollutant gas concentration using the reference method specified in the applicable standard.

2.4 Data Recorder. Analog chart recorder or other suitable device with input voltage range compatible with analyzer system output. The resolution of the recorder's data output shall be sufficient to allow completion of the test procedures within this specification.

2.5 Continuous monitoring system for SO_2 or NO_x pollutants as applicable.

3. **Definitions.**

3.1 Continuous Monitoring System. The total equipment required for the determination of a pollutant gas concentration in a source effluent. Continuous monitoring systems consist of major subsystems as follows:

3.1.1 Sampling Interface - That portion of an extractive continuous monitoring system that performs one or more of the following operations: acquisition, transportation, and conditioning of a sample of the source effluent or that portion of an in-situ continuous monitoring system that protects the analyzer from the effluent.

3.1.2 Analyzer - That portion of the continuous monitoring system which senses the pollutant gas and generates a signal output that is a function of the pollutant concentration.

3.1.3 Data Recorder - That portion of the continuous monitoring system that provides a permanent record of the output signal in terms of concentration units.

3.2 Span. The value of pollutant concentration at which the continuous monitoring system is set to produce the maximum data display output. The span shall be set at the concentration specified in each applicable subpart.

3.3 Accuracy (Relative). The degree of correctness with which the continuous monitoring system yields the value of gas concentration of a sample relative to the value given by a defined reference method. This accuracy is expressed in terms of error, which is the difference between the paired concentration measurements expressed as a percentage of the mean reference value.

3.4 Calibration Error. The difference between the pollutant concentration indicated by the continuous monitoring system and the known concentration of the test gas mixture.

3.5 Zero Drift. The change in the continuous monitoring system output over a stated period of time of normal continuous operation when the pollutant concentration at the time for the measurements is zero.

3.6 Calibration Drift. The change in the continuous monitoring system output over a stated time period of normal continuous operations when the pollutant concentration at the time of the measurements is the same known upscale value.

3.7 Response Time. The time interval from a step change in pollutant concentration at the input to the continuous monitoring system to the time at which 95 percent of the corresponding final value is reached as displayed on the continuous monitoring system data recorder.

3.8 Operational Period. A minimum period of time over which a measurement system is expected to operate within certain performance specifications without unscheduled maintenance, repair, or adjustment.

3.9 Stratification. A condition identified by a difference in excess of 10 percent between the average concentration in the duct or stack and the concentration at any point more than 1.0 meter from the duct or stack wall.

4. Installation Specifications. Pollutant continuous monitoring systems (SO_2 and NO_x) shall be installed at a sampling location where measurements can be made which are directly representative (4.1), or which can be corrected so as to be representative (4.2) of the total emissions from the affected facility. Conformance with this requirement shall be accomplished as follows:

4.1 Effluent gases may be assumed to be nonstratified if a sampling location eight or more stack diameters (equivalent diameters) downstream of any air in-leakage is selected. This assumption and data correction procedures under paragraph 4.2.1 may not be applied to sampling locations upstream of an air preheater in a Fossil Fuel-Fired Steam Generating Facility. For sampling locations where effluent gases are either demonstrated (4.3) or may be assumed to be nonstratified (eight diameters), a point (extractive systems) or path (in-situ systems) of average concentrations may be monitored.

4.2 For sampling locations where effluent gases cannot be assumed to be nonstratified (less than eight diameters) or have been shown under paragraph 4.3 to be stratified, results obtained must be consistently representative (e.g., a point of average concentration may shift with load changes) or the data generated by sampling at a point (extractive systems) or across a path (in-situ systems) must be corrected (4.2.1 and 4.2.2) so as to be representative of the total emissions from the affected facility. Conformance with this requirement may be accomplished in either of the following ways:

4.2.1 Installation of a diluent continuous monitoring system (CO_2 or O_2 as applicable) in accordance with the procedures under paragraph 4.2 of Performance Specification 3 of this Appendix. If the pollutant and diluent monitoring systems are not of the same type (both extractive or both in-situ), the extractive system must use a multipoint probe.

4.2.2 Installation of extractive pollutant monitoring systems using multipoint sampling probes or in-situ pollutant monitoring systems that sample or view emissions which are consistently representative of the total emissions for the entire cross section. The Commissioner may require data to be submitted to demonstrate that the emissions sampled or viewed are consistently representative for several typical facility process operating conditions.

4.3 The owner or operator may perform a traverse to characterize any stratification of effluent gases that might exist in a stack or duct. If no stratification is present, sampling procedures under paragraph 4.1 may be applied even though the eight diameter criteria is not met.

4.4 When single point sampling probes for extractive systems are installed within the stack or duct under paragraph 4.1 and 4.2.1, the sample may not be extracted at any point less than 1.0 meters from the stack or duct wall. Multipoint sampling probes installed under paragraph 4.2.2 may be located at any points necessary to obtain consistently representative samples.

5. Continuous Monitoring System Performance Specifications. The continuous monitoring system shall meet the performance specifications in Table 2-1 to be considered acceptable under this method.

Table 2-1 - Performance Specifications

Parameter	Specification
1. Accuracy[1]	≤20 pct of the mean value of the reference method test data.
2. Calibration error[1]	≤5 pct of each (50 pct, 90 pct) calibration gas mixture value.
3. Zero drift (2 h)[1]	2 pct of span
4. Zero drift (24 h)[1]	DO.
5. Calibration drift (2 hr)[1]	DO.
6. Calibration drift (24 h)[1]	2.5 pct of span
7. Response time	15 min maximum.
8. Operational period	168 h minimum.

[1] Expressed as sum of absolute mean value plus 95 pct confidence interval of a series of tests.

6. Performance Specification Test Procedures. The following test procedures shall be used to determine conformance with the requirements of paragraph 5. For NO_x analyzers that oxidize nitric oxide (NO) to nitrogen dioxide (NO_2), the response time test under paragraph 6.3 of this method shall be performed using nitric oxide (NO) span gas. Other tests for NO_x continuous monitoring systems under paragraphs 6.1 and 6.2 and all tests for sulfur dioxide systems shall be performed using the pollutant span gas specified by each subpart.

6.1 Calibration Error Test Procedure. Set up and calibrate the complete continuous monitoring system according to the manufacturer's written instructions. This may be accomplished either in the laboratory or in the field.

6.1.1 Calibration Gas Analysis. Triplicate analysis of the gas mixtures shall be performed within two weeks prior to use using Reference Methods 6 for SO_2 and 7 for NO_x. Analyze each calibration gas mixture (50%, 90%) and record the results on the example sheet shown in Figure 2-1. Each sample test result must be within 20 percent of the averaged result or the tests shall be repeated. This step may be omitted for non-extractive monitors where dynamic calibration gas mixtures are not used (6.1.2).

6.1.2 Calibration Error Test Procedure. Make a total of 15 non-consecutive measurements by alternately using zero gas and each calibration gas mixture concentration (e.g., 0%, 50%, 0%, 90%, 50%, 90%, 0%, etc.). For nonextractive continuous monitoring systems, this test procedure may be performed by using two or more calibration gas cells whose concentrations are certified by the manufacturer to be functionally equivalent to these gas concentrations. Convert the continuous monitoring system output readings to ppm and record the results on the example sheet shown in Figure 2-2.

6.2 Field Test for Accuracy (Relative), Zero Drift, and Calibration Drift. Install and operate the continuous monitoring system in accordance with the manufacturer's written instructions and drawings as follows:

6.2.1 Conditioning Period. Offset the zero setting at least 10 percent of the span so that negative zero drift can be quantified. Operate the system for an initial 168-hour conditioning period in normal operating manner.

6.2.2 Operational Test Period. Operate the continuous monitoring system for an additional 168-hour period retaining the zero offset. The system shall monitor the source effluent at all times except when being zeroed, calibrated, or backpurged.

6.2.2.1 Field Test for Accuracy (Relative). For continuous monitoring systems employing extractive sampling, the probe tip for the Reference Method sampling train should be placed at adjacent locations in the duct. For NO_x continuous monitoring systems, make 27 NO_x concentration measurements, divided into nine sets, using the applicable reference method. No more than one set of tests, consisting of three individual measurements, shall be performed in any one hour. All individual measurements of each set shall be performed concurrently, or within a three-minute interval and the results averaged. For SO_2 continuous monitoring systems, make nine SO_2 concentration measurements using the applicable reference method. No more than one measurement shall be performed in any one hour. Record the reference method test data and the continuous monitoring system concentrations on the example data sheet shown in Figure 2-3.

6.2.2.2 Field Test for Zero Drift and Calibration Drift. For extractive systems, determine the values given by zero and span gas pollutant concentrations at two-hour intervals until 15 sets of data are obtained. For nonextractive measurement systems, the zero value may be determined by mechanically producing a zero condition that provides a system check of the analyzer internal mirrors and all electronic circuitry including the radiation source and detector assembly or by inserting three or more calibration gas cells and computing the zero point from the upscale measurements. If this latter technique is used, a graph(s) must be retained by the owner or operator for each measurement system that shows the relationship between the upscale measurements and the zero point. The span of the system shall be checked by using a calibration gas cell certified by the manufacturer to be functionally equivalent to 50 percent of span concentration. Record the zero and span measurements (or the computed zero drift) on the example data sheet shown in Figure 2-4. The two-hour periods over which measurements are conducted need not be consecutive but may not overlap. All measurements required under this paragraph may be conducted concurrent with tests under paragraph 6.2.2.1.

6.2.2.3 Adjustments. Zero and calibration corrections and adjustments are allowed only at 24-hour intervals or at such shorter intervals as the manufacturer's written instructions specify. Automatic corrections made by the measurement system without operator intervention or initiation are allowable at any time. During the entire 168-hour operational test period, record on the example sheet shown in Figure 2-5 the values given by zero and span gas pollutant concentrations before and after adjustment at 24-hour intervals.

6.3 Field Test for Response Time.

6.3.1 Scope of Test. Use the entire continuous monitoring system as installed, including sample transport lines if used. Flow rates, line diameters, pumping rates, pressure (do not allow the pressurized calibration gas to change the normal operating pressure in the sample line), etc., shall be at the nominal values for normal operation as specified in the manufacturer's written instructions. If the analyzer is used to sample more than one pollutant source (stack), repeat this test for each sampling point.

6.3.2 Response Time Test Procedure. Introduce zero gas into the continuous monitoring system sampling interface or as close to the sampling interface as possible. When the system output reading has stabilized, switch quickly to a known concentration of pollutant gas. Record the time from concentration switching to 90 percent of final stable response. For nonextractive monitors, the highest available calibration gas concentration shall be switched into and out of the sample path and response times recorded. Perform this test sequence three (3) times. Record the results of each test on the example sheet shown in Figure 2-6.

7. Calculations, Data Analysis and Reporting.

7.1 Procedure for determination of mean values and confidence intervals.

7.1.1 The mean value of a data set is calculated according to equation 2-1.

$$\bar{X} = \frac{1}{n} \sum_{i=1}^{n} X_i$$

Equation 2-1

where:

X_1 = absolute value of the measurements.

Σ = sum of the individual values.

X = mean value, and

n = number of data points.

7.1.2 The 95 percent confidence interval (two-sided) is calculated according to equation 2-2:

$$C.I._{95} = \frac{t_{.975}}{n\sqrt{n-1}} \sqrt{n(\Sigma X_i^2) - (\Sigma X_i)^2}$$

Equation 2-2

where:

ΣX_1 = sum of all data points,

$t_{.975} = t_1 - \alpha/2$, and

$C.I._{95}$ = 95 percent confidence interval estimate of the average mean value.

Values for $t_{.975}$

	$t_{.975}$
1..................	12.706
2..................	4.303
3..................	3.182
4..................	2.776
5..................	2.571
6..................	2.447
7..................	2.365
8..................	2.306

Values for $t_{.975}$

	$t_{.975}$
9	2.262
10	2.228
12	2.201
13	2.179
14	2.160
15	2.145
16	2.131

The values in this table are already corrected for n-1 degrees of freedom. Use n equal to the number of samples as data points.

7.2 Data Analysis and Reporting.

7.2.1. Accuracy (Relative). For each of the (nine) reference method test points, determine the average pollutant concentration reported by the continuous monitoring system. These average concentrations shall be determined from the continuous monitoring system data recorded under 7.2.2 by integrating or averaging the pollutant concentrations over each of the time intervals concurrent with each reference method testing period. Before proceeding to the next step, determine the basis (wet or dry) of the continuous monitoring system data and reference method test data concentrations. If the bases are not consistent, apply a moisture correction to either reference method concentrations or the continuous monitoring system concentrations as appropriate. Determine the correction factor by moisture tests concurrent with the reference method testing periods. Report the moisture test method and the correction procedure employed. For each of the nine test runs determine the difference for each test run by subtracting the respective reference method test concentrations (use average of each set of three measurements for NO_x) from the continuous monitoring system integrated or averaged concentrations. Using these data, compute the mean difference and the 95 percent confidence interval of the differences (equations 2-1 and 2-2). Accuracy is reported as the sum of the absolute value of the mean difference and the 95 percent confidence interval of the differences expressed as a percentage of the mean reference method value. Use the example sheet shown in Figure 2-3.

7.2.2 Calibration Error. Using the data from paragraph 6.1, subtract the measured pollutant concentration determined under paragraph 6.1.1 (Figure 2-1) from the value shown by the continuous monitoring system for each of the five readings at each concentration measured under 6.1.2 (Figure 2-2). Calculate the mean of these difference values and the 95 percent confidence intervals according to equations 2-1 and 2-2. Report the calibration error (the sum of the absolute value of the mean difference and the 95 percent confidence interval) as a percentage of each respective calibration gas concentration. Use example sheet shown in Figure 2-2.

7.2.3 Zero Drift (2-hour). Using the zero concentration values measured each two hours during the field test, calculate the differences between consecutive two-hour readings expressed in ppm. Calculate the mean difference and the confidence interval using equations 2-1 and 2-2. Report the zero drift as the sum of the absolute mean value and the confidence interval as a percentage of span. Use example sheet shown in Figure 2-4.

7.2.4 Zero Drift (24-hour). Using the zero concentration values measured every 24 hours during the field test, calculate the differences between the zero point after zero adjustment and the zero value 24 hours later just prior to zero adjustment. Calculate the mean value of these points and the confidence interval using equations 2-1 and 2-2. Report the zero drift (the sum of the absolute mean and confidence interval) as a percentage of span. Use example sheet shown in Figure 2-5.

7.2.5 Calibration Drift (2-hour). Using the calibration values obtained at two-hour intervals during the field test, calculate the differences between consecutive two-hour readings expressed as ppm. These values should be corrected for the corresponding zero drift during that two-hour period. Calculate the mean and confidence interval of these corrected difference values using equations 2-1 and 2-2. Do not use the differences between non-consecutive readings. Report the calibration drift as the sum of the absolute mean and confidence interval as a percentage of span. Use the example sheet shown in Figure 2-4.

7.2.6 Calibration Drift (24-hour). Using the calibration values measured every 24 hours during the field test, calculate the differences between the calibration concentration reading after zero and calibration adjustment, and the calibration concentration reading 24 hours later after zero adjustment but before calibration adjustment. Calculate the mean value of these differences and the confidence interval using equations 2-1 and 2-2. Report the calibration drift (the sum of the absolute mean and confidence interval) as a percentage of span. Use the example sheet shown in Figure 2-5.

7.2.7 Response Time. Using the charts from paragraph 6.3, calculate the time interval from concentration switching to 95 percent to the final stable value for all upscale and downscale tests. Report the mean of the three upscale test times and the mean of the three downscale test times. The two average times should not differ by more than 15 percent of the slower time. Report the slower time as the system response time. Use the example sheet shown in Figure 2-6.

7.2.8 Operational Test Period. During the 168-hour performance and operational test period, the continuous monitoring system shall not require any corrective maintenance, repair, replacement, or adjustment other than that clearly specified as required in the operation and maintenance manuals as routine and expected during a one-week period. If the continuous monitoring system operates within the specified performance parameters and does not require corrective maintenance, repair, replacement, or adjustment other than as specified above during the 168-hour test period, the operational period will be successfully concluded. Failure of the continuous monitoring system to meet this requirement shall call for a repetition of the 168-hour test period. Portions of the test which were satisfactorily completed need not be repeated. Failure to meet any performance specifications shall call for a repetition of the one week performance test period and that portion of the testing which is related to the failed specification. All maintenance and adjustments required shall be recorded. Output readings shall be recorded before and after all adjustments.

8. References.

8.1 "Monitoring Instrumentation for the Measurement of Sulfur Dioxide in Stationary Source Emissions," Environmental Protection Agency, Research Triangle Park, N.C., February 1973.

8.2 "Instrumentation for the Determination of Nitrogen Oxides Content of Stationary Source Emissions," Environmental Protection Agency, Research Triangle Park, N.C., Volume 1, APTD-0847, October 1971: Volume 2, APTD-0942, January 1972.

8.3 "Experimental Statistics," Department of Commerce, Handbook 91, 1963, pp. 3-31, paragraphs 3-3.1.4.

8.4 "Performance Specifications for Stationary-Source Monitoring Systems for Gases and Visible Emissions," Environmental Protection Agency, Research Triangle Park, N.C., EPA-650/2-74-013, January 1974.

Date ______________________ Reference Method Used ______

Mid-Range Calibration Gas Mixture

Sample 1 ____________ppm
Sample 2 ____________ppm
Sample 3 ____________ppm
Average ____________ppm

High-Range (span) Calibration Gas Mixture

Sample 1 ____________ppm
Sample 2 ____________ppm
Sample 3 ____________ppm
Average ____________ppm

Figure 2-1. Analysis of Calibration Gas Mixtures

Calibration Gas Mixture Data (From Figure 2-1)

Mid (50%) _____ppm High (90%) ____ ppm

Run #	Calibration Gas Concentration, ppm	Measurement System Reading, ppm	Differences,[1] ppm
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			

Mean difference _____ _____

Confidence interval + _____ + _____

Calibration error = $\frac{\text{Mean Difference}^2 + \text{C.I.}}{\text{Average Calibration Gas Concentration}}$ X 100 ____% ____%

---

[1] Calibration gas concentration - measurement system reading

[2] Absolute value

Figure 2-2. Calibration Error Determination

Test No.	Date and Time	Reference Method Samples					Analyzer 1-Hour Average (ppm)*		Difference (ppm)	
		SO_2 Sample 1 (ppm)	NO_x Sample 1 (ppm)	NO_x Sample 2 (ppm)	NO_x Sample 3 (ppm)	NO_x Sample Average (ppm)	SO_2	NO_x	SO_2	NO_x
1										
2										
3										
4										
5										
6										
7										
8										
9										

Mean reference method test value (SO_2) ________

Mean reference method test value (NO_x) ________

Average of the differences ________

Mean differences** = ________ppm (SO_2), = ________ppm (NO_x).

95% Confidence intervals = ± ________ppm (SO_2), = ± ________ppm (NO_x).

Accuracies = $\frac{\text{Mean difference (absolute value) + 95\% confidence interval}}{\text{Mean reference method value}}$ X 100 = ____% (SO_2), = ____% (NO_x).

*Explain and report method used to determine integrated averages.

**Mean differences = the average of the differences minus the mean reference method test value.

Figure 2-3. Accuracy Determination (SO_2 and NO_x)

Data Set No.	Time Begin	Time End	Date	Zero Reading	Zero Drift (ΔZero)	Span Reading	Span Drift (ΔSpan)	Calibration Drift (Span-Zero)
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								

Zero Drift = [Mean Zero Drift* _______ + CI (Zero)_______] ÷ [Span] x 100 = __

Calibration Drift = [Mean Span Drift* ____ + CI (Span)____] ÷ [Span] x 100 = _

*Absolute value.

Figure 2-4. Zero and Calibration Drift (2 Hour)

Date and Time	Zero Reading	Zero Drift (ΔZero)	Span Reading (After zero adjustment)	Calibration Drift (ΔSpan)

Zero Drift = [Mean Zero Drift* _______ + C.I. (Zero) _______]

÷ [Instrument Span] x 100 = _______.

Calibration Drift = [Mean Span Drift* _______ + C.I. (Span) _______]

÷ [Instrument Span] x 100 = _______.

*Absolute value

Figure 2-5. Zero and Calibration Drift (24-hour)

Date of Test ______________

Span Gas Concentration __________ppm

Analyzer Span Setting __________ppm

Upscale

1 __________seconds

2 __________seconds

3 __________seconds

Average upscale response __________seconds

Downscale

1 __________seconds

2 __________seconds

3 __________seconds

Average downscale response ________seconds

System average response time (slower time) = ____seconds.

$$\text{% deviation from slower system average response} = \frac{\text{average upscale minus average downscale}}{\text{slower time}} \times 100\% = \_\_\_.$$

Figure 2-6. Response Time

Performance Specification 3 - Performance specifications and specification test procedures for monitors of CO_2 and O_2 from stationary sources.

1. Principle and Applicability.

1.1 Principle. Effluent gases are continuously sampled and are analyzed for carbon dioxide or oxygen by a continuous monitoring system. Tests of the system are performed during a minimum operating period to determine zero drift, calibration drift, and response time characteristics.

1.2 Applicability. This performance specification is applicable to evaluation of continuous monitoring systems for measurement of carbon dioxide or oxygen. These specifications contain test procedures, installation requirements, and data computation procedures for evaluating the acceptability of the continuous monitoring systems subject to approval by the Commissioner. Sampling may include either extractive or nonextractive (in-situ) procedures.

2. Apparatus.

2.1 Continuous Monitoring System for Carbon Dioxide or Oxygen.

2.2 Calibration Gas Mixtures. Mixture of known concentrations of carbon dioxide or oxygen in nitrogen or air. Midrange and 90 percent of span carbon dioxide or oxygen concentrations are required. The 90 percent of span gas mixture is to be used to set and check the analyzer span and is referred to as span gas. For oxygen analyzers, if the span is higher than 21 percent O_2, ambient air may be used in place of the 90 percent of span calibration gas mixture. Triplicate analysis of the gas mixture (except ambient air) shall be performed within two weeks prior to use using Reference Method 3 of this part.

2.3 Zero Gas. A gas containing less than 100 ppm of carbon dioxide or oxygen.

2.4 Data Recorder. Analog chart recorder or other suitable device with input voltage range compatible with analyzer system output. The resolution of the recorder's data output shall be sufficient to allow completion of the test procedures within this specification.

3. Definitions.

3.1 Continuous Monitoring System. The total equipment required for the determination of carbon dioxide or oxygen in a given source effluent. The system consists of three major subsystems:

3.1.1 Sampling Interface. That portion of the continuous monitoring system that performs one or more of the following operations:

delineation, acquisition, transportation, and conditioning of a sample of the source effluent or protection of the analyzer from the hostile aspects of the sample or source environment.

3.1.2 Analyzer. That portion of the continuous monitoring system which senses the pollutant gas and generates a signal output that is a function of the pollutant concentration.

3.1.3 Data Recorder. That portion of the continuous monitoring system that provides a permanent record of the output signal in terms of concentration units.

3.2 Span. The value of oxygen or carbon dioxide concentration at which the continuous monitoring system is set that produces the maximum data display output. For the purpose of this method, the span shall be set no less than 1.5 to 2.5 times the normal carbon dioxide or normal oxygen concentration in the stack gas of the affected facility.

3.3 Midrange. The value of oxygen or carbon dioxide concentration that is representative of the normal conditions in the stack gas of the affected facility at typical operating rates.

3.4 Zero Drift. The change in the continuous monitoring system output over a stated period of time of normal continuous operation when the carbon dioxide or oxygen concentration at the time for the measurements is zero.

3.5 Calibration Drift. The change in the continuous monitoring system output over a stated time period of normal continuous operation when the carbon dioxide or oxygen continuous monitoring system is measuring the concentration of span gas.

3.6 Operational Test Period. A minimum period of time over which the continuous monitoring system is expected to operate within certain performance specifications without unscheduled maintenance, repair, or adjustment.

3.7 Response Time. The time interval from a step change in concentration at the input to the continuous monitoring system to the time at which 95 percent of the corresponding final value is displayed on the continuous monitoring system data recorder.

4. Installation Specification. Oxygen or carbon dioxide continuous monitoring systems shall be installed at a location where measurements are directly representative of the total effluent from the affected facility or representative of the same effluent sampled by a SO_2 or NO_x monitoring system. This requirement shall be complied with by use of applicable requirements in Performance Specification 2 of this Appendix as follows:

4.1 Installation of Oxygen or Carbon Dioxide Continuous Monitoring Systems Not Used to Convert Pollutant Data. A sampling location shall be selected in accordance with the procedures under paragraphs 4.2.1 or 4.2.2 or Performance Specification 2 of this Appendix.

4.2 Installation of Oxygen or Carbon Dioxide Continuous Monitoring Systems Used to Convert Pollutant Continuous Monitoring System Data to Units of Applicable Standards. The diluent continuous monitoring system (oxygen or carbon dioxide) shall be installed at a sampling location where measurements that can be made are representative of the effluent gases sampled by the pollutant continuous monitoring system(s). Conformance with this requirement may be accomplished in any of the following ways:

4.2.1 The sampling location for the diluent system shall be near the sampling location for the pollutant continuous monitoring system such that the same approximate point(s) (extractive systems) or path (in-situ systems) in the cross section is sampled or viewed.

4.2.2 The diluent and pollutant continuous monitoring systems may be installed at different locations if the effluent gases at both sampling locations are nonstratified as determined under paragraphs 4.1 or 4.3, Performance Specification 2 of this Appendix and there is no in-leakage occurring between the two sampling locations. If the effluent gases are stratified at either location, the procedures under paragraph 4.2.2 Performance Specification 2 of this Appendix shall be used for installing continuous monitoring systems at that location.

5. Continuous Monitoring System Performance Specifications. The continuous monitoring system shall meet the performance specifications in Table 3-1 to be considered acceptable under this method.

6. Performance Specification Test Procedures. The following test procedures shall be used to determine conformance with the requirements of paragraph 4. Due to the wide variation existing in analyzer designs and principles of operation, these procedures are not applicable to all analyzers. Where this occurs, alternative procedures, subject to the approval of the Commissioner, may be employed. Any such alternative procedures must fulfill the same purposes (verify response, drift, and accuracy) as the following procedures, and must clearly demonstrate conformance with specifications in Table 3-1.

6.1 Calibration Check. Establish a calibration curve for the continuous monitoring system using zero, midrange and span concentration gas mixtures. Verify that the resultant curve of analyzer reading compared with the calibration gas value is consistent with the expected response curve as described by the analyzer manufacturer. If the expected response curve is not produced, additional calibration gas measurements shall be made, or additional steps undertaken to verify the accuracy of the response curve of the analyzer.

6.2 Field Test for Zero Drift and Calibration Drift. Install and operate the continuous monitoring system in accordance with the manufacturer's written instructions and drawing as follows:

Table 3-1. - Performance Specifications

Parameter	Specification
1. Zero drift (2 h)[1]........	$\leq$0.4 pct O_2 or CO_2.
2. Zero drift (24 h)[1].......	$\leq$0.5 pct O_2 or CO_2.
3. Calibration drift (2 h)[1]..	$\leq$0.4 pct O_2 or CO_2.
4. Calibration drift (24 h)[1].	$\leq$0.5 pct O_2 or CO_2.
5. Operational period........	168 h minimum.
6. Respnse time..............	10 min.

[1] Expressed as sum of absolute mean value plus 95 pct confidence interval of a series of tests.

6.2.1 Conditioning Period. Offset the zero setting at least 10 percent of span so that negative zero drift may be quantified. Operate the continuous monitoring system for an initial 168-hour conditioning period in a normal operational manner.

6.2.2 Operational Test Period. Operate the continuous monitoring system for an additional 168-hour period maintaining the zero offset. The system shall monitor the source effluent at all times except when being zeroed, calibrated, or backpurged.

6.2.3 Field Test for Zero Drift and Calibration Drift. Determine the values given by zero and midrange gas concentrations at two-hour intervals until 15 sets of data are obtained. For nonextractive continuous monitoring systems, determine the zero value given by a mechanically produced zero condition or by computing the zero value from upscale measurements using calibrated gas cells certified by the manufacturer. The midrange checks shall be performed by using certified calibration gas cells functionally equivalent to less than 50 percent of span. Record these readings on the example sheet shown in Figure 3-1. These two-hour periods need not be consecutive but may not overlap. In-situ CO_2 or O_2 analyzers which cannot be fitted with a calibration gas cell may be calibrated by alternative procedures acceptable to the Commissioner. Zero and calibration corrections and adjustments are allowed only at 24-hour intervals or at such shorter intervals as the manufacturer's written instructions specify. Automatic corrections made by the continuous monitoring system without operator intervention or in initiation are allowable at any time. During the entire 168-hour test period, record the values given by zero and span gas concentrations before and after adjustment at 24-hour intervals in the example sheet shown in Figure 3-2.

6.3 Field Test for Response Time.

6.3.1 Scope of Test. This test shall be accomplished using the continuous monitoring system as installed, including sample transport lines if used. Flow rates, line diameters, pumping rates, pressures (do not allow the pressurized calibration gas to change the normal operating pressure in the sample line), etc., shall be at the nominal values for normal operation as specifed in the manufacturer's written instructions. If the analyzer is used to sample more than one source (stack), this test shall be repeated for each sampling point.

6.3.2 Response Time Test Procedure. Introduce zero gas into the continuous monitoring system sampling interface or as close to the sampling interface as possible. When the system output reading has stabilized, switch quickly to a known concentration of gas at 90 percent of span. Record the time from concentration switching to 95 percent of final stable response. After the system response has stabilized at the upper level, switch quickly to a zero gas. Record the time from concentration switching to 90 percent of final stable response. Alternatively, for nonextractive continuous monitoring systems, the highest available calibration gas concentration shall be switched into and out of the sample path and response times recorded. Perform this test sequence three (3) times. For each test, record the results on the data shown in Figure 3-3.

7. Calculations, Data Analysis, and Reporting.

7.1 Procedure for determination of mean values and confidence intervals.

7.1.1 The mean value of a data set is calculated according to equation 3-1.

$$\bar{X} = \frac{1}{n} \sum_{i=1}^{n} X_i \qquad \text{Equation 3-1}$$

where:

X_i = absolute value of the measurements,

Σ = sum of the individual values,

X = mean value, and

n = number of data points.

7.1.2 The 95 percent confidence interval (two-sided) is calculated according to equation 3-2:

$$C.I._{95} = \frac{t_{.975}}{n\sqrt{n-1}} \sqrt{n(\Sigma X_i^{2}) - (\Sigma X_i)^{2}}$$

Equation 3-2

where:

ΣX = sum of all data points,

$t_{.975}$ = $t_1 - \alpha/2$, and

$C.I._{95}$ = 95 percent confidence interval estimated of the average mean value

Values for $t_{.975}$

n	$t_{.975}$
2	12.706
3	4.303
4	3.182
5	2.776
6	2.571
7	2.447
8	2.365
9	2.306
10	2.262
11	2.228
12	2.201
13	2.179
14	2.160
15	2.145
16	2.131

The values in this table are already corrected for n-1 degrees of freedom. Use n equal to the number of samples as data points.

7.2 Data Analysis and Reporting.

7.2.1 Zero Drift (2-hour). Using the zero concentration values measured each two hours during the field test, calculate the differences between the consecutive two-hour readings expressed in ppm. Calculate the mean difference and the confidence interval using equations 3-1 and 3-2. Record the sum of the absolute mean value and the confidence interval on the data sheet shown in Figure 3-1.

7.2.2 Zero Drift (24-hour). Using the zero concentration values measured every 24 hours during the field test, calculate the differences between the zero point after zero adjustment and the zero value 24 hours later just prior to zero adjustment. Calculate the mean value of these points and the confidence interval using equations 3-1 and 3-2. Record the zero drift (the sum of the absolute mean and confidence interval) on the data sheet shown in Figure 3-2.

7.2.3 Calibration Drift (2-hour). Using the calibration values obtained at two-hour intervals during the field test, calculate the differences between consecutive two-hour readings expressed as ppm. These values should be corrected for the corresponding zero drift during that two-hour period. Calculate the mean and confidence interval of these corrected differences values using equations 3-1 and 3-2. Do not use the differences between non-consecutive readings. Record the sum of the absolute mean and confidence interval upon the data sheet shown in Figure 3-1.

7.2.4 Calibration Drift (24-hour). Using the calibration values measured every 24 hours during the field test, calculate the differences between the calibration concentration reading after zero and calibration adjustment and the calibration concentration reading 24 hours later after zero adjustment but before calibration adjustment. Calculate the mean value of these differences and the confidence interval using equations 3-1 and 3-2. Record the sum of the absolute mean and confidence interval on the data sheet shown in Figure 3-2.

7.2.5 Operational Test Period. During the 168-hour performance and operational test period, the continuous monitoring system shall not receive any corrective maintenance, repair, replacement, or adjustment other than that clearly specified as required in the manufacturer's written operation and maintenance manuals as routine and expected during a one-week period. If the continuous monitoring system operates within the specified performance parameters and does not require corrective maintenance, repair, replacement or adjustment other than as specified above during the 168-hour test period, the operational period will be successfully concluded. Failure of the continuous monitoring system to meet this requirement shall call for a repetition of the 168-hour test period. Portions of the test which were satisfactorily completed need not be repeated. Failure to meet any performance specifications shall call for a repetition of the one-week performance test period and that portion of the testing which is related to the failed specification. All maintenance and adjustments required shall be recorded. Output readings shall be recorded before and after all adjustments.

7.2.6 Response Time. Using the data developed under paragraph 5.3, calculate the time interval from concentration switching to 95 percent to the final stable value for all upscale and downscale tests. Report the mean of the three upscale test times and the mean of the three downscale test times. The two average times should not differ by more than 15 percent of the slower time. Report the slower time as the system response time. Record the results on Figure 3-3.

8. References.

8.1 "Performance Specifications for Stationary Source Monitoring Systems for Gases and Visible Emissions," Environmental Protection Agency, Research Triangle Park, N.S., EPA-650/2-74-013, January 1974.

8.2 "Experimental Statistics," Department of Commerce, National Bureau of Standards Handbook 91, 1963, pp. 3-31, paragraphs 3-3.1.4.

(Secs. 111 and 114 of the Clean Air Act, as amended by sec. 4(a) of Pub. L. 91-604, 84 Stat. 1678 (42 U.S.C. 1857c-6, by sec. 15(c)(2) of Pub. L. 91-604, 85 Stat. 1713 (42 U.S.C. 1857g)).

Data Set No.	Time Begin	Time End	Date	Zero Reading	Zero Drift (ΔZero)	Span Reading	Span Drift (ΔSpan)	Calibration Drift (ΔSpan-ΔZero)
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								

Zero Drift = [Mean Zero Drift* _____ + CI (Zero) _____] = _____.
Calibration Drift = [Mean Span Drift* _____ + CI (Span) _____] = _____.
*Absolute Value.

Figure 3-1. Zero and Calibration Drift (2 Hour).

Date and Time	Zero Reading	Zero Drift (ΔZero)	Span Reading (After zero adjustment)	Calibration Drift (ΔSpan)

Zero Drift = [Mean Zero Drift* _____ + C.I. (Zero) _____]

= _____.

Calibration Drift = [Mean Span Drift* _____ + C.I. (Span) _____]

= _____.

*Absolute value.

Figure 3-2. Zero and Calibration Drift (24-hour)

Date of Test ____________________

Span Gas Concentration ____________ppm

Analyzer Span Setting ____________ppm

Upscale
1. ____________seconds
2. ____________seconds
3. ____________seconds

Average upscale response ____________seconds

Downscale
1. ____________seconds
2. ____________seconds
3. ____________seconds

Average downscale response __________seconds

System average response time (slower time) = ____________seconds

%Deviation from slower system average response $= \frac{\text{average upscale minus average downscale}}{\text{slower time}} \times 100\%$

= ____________.

Figure 3-3. Response

Visible Air Contaminant Limitations

340-21-015 (1) Existing Sources Outside Special Control Areas. No person shall cause, suffer, allow, or permit the emission of any air contaminant into the atmosphere from any existing air contaminant source located outside a Special Control Area for a period or periods aggregating more than 3 minutes in any one hour which is:

(a) As dark or darker in shade as that designated as No. 2 on the Ringlemann Chart, or

(b) Equal to or greater than 40% opacity.

(2) New Sources in All Areas and Existing Sources Within Special Control Areas: No person shall cause, suffer, allow, or permit the emission of any air contaminant into the atmosphere from any new air contaminant source, or from any existing source within a Special Control Area, for a period or periods aggregating more than 3 minutes in any one hour which is:

(a) As dark or darker in shade as that designated as No. 1 on the Ringlemann Chart, or

(b) Equal to or greater than 20% capacity.

(3) Exceptions to 340-21-015(1) and 340-21-015(2).

(a) Where the presence of uncombined water is the only reason for failure of any emission to meet the requirements of Sections 340-21-015(1) and 340-21-015(2), such sections shall not apply.

(b) Existing fuel burning equipment utilizing wood wastes and located within Special Control Areas shall comply with the emission limitations of subsection 340-21-015(1) in lieu of subsection 340-21-015(2).

[Publications: The publication(s) referred to or incorporated by reference in this rule is available in the office of the Department of Environmental Quality or Secretary of State.]

Statutory Authority:
Hist: Filed 6-12-70 as DEQ 16, Eff. 7-11-70

DIVISION 22

Residual Fuel Oils

340-22-010 (1) After July 1, 1972, no person shall sell, distribute, use, or make available for use, any residual fuel oil containing more than 2.5 percent sulfur by weight.

(2) After July 1, 1974, no person shall sell, distribute, use, or make available for use, any residual fuel oil containing more than 1.75 percent sulfur by weight.

Statutory Authority: ORS 468.020
Hist: Filed 2-15-72 as DEQ 37,
Eff. 3-1-72
Amended 3-25-75 by DEQ 87,
Eff. 4-25-75
Amended by DEQ 141,
Filed and Eff. 8-25-77

DIVISION 22

Distillate Fuel Oils

340-22-015 After July 1, 1972, no person shall sell, distribute, use, or make available for use, any distillate fuel oil containing more than the following percentages of sulfur:

(1) ASTM Grade 1 fuel oil - 0.3 percent by weight

(2) ASTM Grade 2 fuel oil - 0.5 percent by weight.

Statutory Authority:
Hist: Filed 2-15-72 as DEQ 37,
Eff. 3-1-72

Coal

340-22-020 After July 1, 1972, no person shall sell, distribute, use, or make available for use, any coal containing greater than 1.0 percent sulfur by weight.

Statutory Authority:
Hist: Filed 2-15-72 as DEQ 37,
Eff. 3-1-72

General Emission Standards for Sulfur Dioxide

Definitions

340-22-050 As used in this regulation, unless otherwise required by context:

(1) "Fuel burning equipment" means equipment, other than internal combustion engines, the principal purpose of which is to produce heat or power by indirect heat transfer.

(2) "New source" means any air contaminant source installed, constructed, or modified after January 1, 1972.

Statutory Authority:
Hist: Filed 2-15-72 as DEQ 37,
Eff. 3-1-72

OREGON

DIVISION 22

Fuel Burning Equipment

340-22-055 The following emission standards are applicable to new sources only:

(1) For fuel burning equipment having more than 150 million BTU per hour heat input, but not more than 250 million BTU per hour heat input, no person shall cause, suffer, allow, or permit the emission into the atmosphere of sulfur dioxide in excess of:

(a) 1.4 lb. per million BTU heat input, maximum 2-hour average, when liquid fuel is burned.

(b) 1.6 lb. per million BTU heat input, maximum 2-hour average, when solid fuel is burned.

(2) For fuel burning equipment having more than 250 million BTU per hour heat input, no person shall cause, suffer, allow, or permit the emission into the atmosphere of sulfur dioxide in excess of:

(a) 0.8 lb. per million BTU heat input, maximum 2-hour average, when liquid fuel is burned.

(b) 1.2 lb. per million BTU heat input, maximum 2-hour average, when solid fuel is burned.

Statutory Authority:
Hist: Filed 2-15-72 as DEQ 37,
Eff. 3-1-72

DIVISION 25

Emission and Operation Standards for Wigwam Waste Burners

340-25-020 (1) No person shall cause, suffer, allow or permit the emission of air contaminants into the atmosphere from any wigwam waste burner for a period or periods aggregating more than three (3) minutes in any one hour which is equal to or greater than 20% opacity.

(2) Resultant emissions notwithstanding, no person shall use a wigwam waste burner for the incineration of other than production process wood wastes. Such wood wastes shall be transported to the burner by continuous flow conveying methods.

Statutory Authority:
Hist: Filed 2-15-72 as DEQ 37, Eff. 3-1-72

25-165 EMISSION LIMITATIONS

(1) Emission of Total Reduced Sulfur (TRS).

(a) Recovery Furnaces.

(A) The emissions of TRS from each recovery furnace placed in operation before January 1, 1969 shall not exceed 10 ppm as a daily arithmetic average and 0.15 Kg S/metric ton (0.30 lb S/ton) of production as a monthly arithmetic average.

(B) TRS emissions from each new recovery furnace placed in operation after January 1, 1969 or any recovery furnace modified significantly to expand production shall be controlled such that the emissions of TRS shall not exceed 5 ppm as a daily arithmetic average and 0.08 Kg S/metric ton (0.15 lb S/ton) of production as a monthly arithmetic average.

(b) Lime Kilns. Lime Kilns shall be operated and controlled such that emissions of TRS shall not exceed:

(A) 40 ppm and 0.1 Kg S/metric ton (0.2 lb S/ton) of production as monthly arithmetic averages.

(B) As soon as practicable, but not later than July 1, 1978, 20 ppm and 0.05 Kg S/metric ton (0.1 lb S/ton) of production as monthly arithmetic averages.

(C) As soon as practicable, but not later than July 1, 1983, 20 ppm as a daily arithmetic average and 0.05 Kg S/metric ton (0.1 lb S/ton) of production as a monthly arithmetic average.

(D) 20 ppm as a daily arithmetic average and 0.05 Kg S/metric ton (0.1 lb S/ton) of production as a monthly arithmetic average from each new lime kiln placed in operation or any lime kiln modified significantly to expand production.

(c) Non-condensibles

(A) Non-condensibles from digesters and multiple-effect evaporators shall be continuously treated to destroy TRS gases by thermal incineration in a lime kiln or incineration device capable of subjecting the non-condensibles to a temperature of not less than 650°C (1200°F) for not less than 0.3 seconds.

(B) When steam-or air-stripping of condensates or other contaminated streams is practiced, the stripped gases shall be subjected to treatment in the non-condensible system or otherwise given equivalent treatment.

(d) Other Sources.

(A) As soon as practicable, but not later than July 1, 1978, the total emission of TRS from other sources, including but not limited to knotters and brown stock washer vents, brown stock washer filtrate tank vents, black liquor oxidation vents, and contaminated condensate stripping shall not exceed 0.1 Kg S/metric ton (0.2 lbs/ton) of production.

(B) Miscellaneous Sources and Practices. When it is determined that sewers, drains, and anaerobic lagoons significantly contribute to an odor problem, a program for control shall be required.

(e) Compliance Programs. Each mill with any sources not in compliance with the 1978 emission limits shall submit a program and schedule for achieving compliance to the Department for approval by no later than August 1, 1977. As soon as practicable but not later than January 1, 1980 each mill with lime kiln(s) not in compliance with the 1983 limits shall submit a program and schedule for achieving compliance.

(2) Particulate Matter.

(a) Recovery Furnaces. The emissions of particulate matter from each recovery furnace stack shall not exceed a monthly arithmetic average of:

(A) 2.0 kilograms per metric ton (four (4) pounds per ton) of production and

(3) Sulfur Dioxide (SO_2). Emissions of sulfur dioxide from each recovery furnace stack shall not exceed a arithmetic average of 300 ppm on a dry-gas basis except during start-up and shut-down periods.

25-180 MONITORING

(1) General.

(a) The details of the monitoring program for each mill shall be submitted to and approved by the Department. This submittal shall include diagrams and descriptions of all monitoring systems, monitoring frequencies, calibration schedules, descriptions of all sampling sites, data reporting formats and duration of maintenance of all data and reports. Any changes that are subsequently made in the approved monitoring program shall be submitted in writing to the Department for review and approved in writing prior to change.

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(b) All records associated with the approved monitoring program including but not limited to original data sheets, charts, calculations, calibration data, production records and final reports shall be maintained for a continuous period of at least 365 days and shall be furnished to the Department upon request.

(2) Total Reduced Sulfur (TRS). Each mill shall continually monitor TRS in accordance with the following:

(a) The monitoring equipment shall determine compliance with the emission limits and reporting requirements established by these regulations, and shall continually sample and record concentrations of TRS.

(b) The sources monitored shall include, but are not limited to, the recovery furnace stacks and the lime kiln stacks.

(c) At least once per year, vents from other sources as required in 25-165 (1) (d) Other Sources, shall be sampled to demonstrate the representativeness of the emissions of TRS and the results shall be reported to the Department.

(3) Particulate Matter. Each mill shall sample the recovery furnace(s), lime kiln(s) and smelt dissolving tank(s) for particulate emissions with, (a) the sampling method and (b) the analytical method approved in writing by the Department. Each mill shall provide continual monitoring of opacity of emissions discharged to the atmosphere from the recovery furnace or particulate matter from the recovery furnace(s) in a manner approved in writing by the Department.

(4) Sulfur Dioxide (SO_2). Representative sulfur dioxide emissions from the recovery furnace(s) shall be determined at least once each month.

(5) Combined Monitoring. The Department may allow the monitoring of a combination of more than one emission stream if each individual emission stream has been demonstrated to be in compliance with all the emission limits of Section 25-165. The emission limits for the combined emission stream shall be established by the Department.

25-185 REPORTING

Unless otherwise authorized or required by permit, data shall be reported by each mill for each calendar month by the fifteenth day of the subsequent calendar month as follows:

(1) Daily average emissions of TRS gases expressed in parts per million of H_2S on a dry gas basis for each source included in the approved monitoring program.

(2) Monthly average emissions of TRS gases in kilograms of sulfur per metric ton of pulp processed for each source included in the approved monitoring program.

(3) Monthly average emission of SO_2 based on all samples collected from the recovery furnace(s), expressed as ppm, dry basis.

(4) Monthly average emission of particulates in grams per standard cubic meter and kilograms per metric ton of pulp produced based upon the sampling conducted in accordance with the approved monitoring program.

(5) Average monthly equivalent kraft pulp production.

(6) Average daily and the value of the maximum hourly opacity, and/or the average daily and the value of the maximum hourly particulate emissions in grams per standard cubic meter for each recovery furnace stack on a daily basis.

(7) The results of each recovery furnace particulate source test in grams per standard cubic meter and for the same source test period the continual average opacity or the particulate monitoring record obtained in accordance with the approved continual monitoring program required in section 25-180 (3).

(8) Unless otherwise approved in writing, the cumulative number of hourly averages each day that the recovery furnace particulate and TRS, and lime kiln TRS emissions exceed the numerical regulatory or permit limits.

(9) Upset conditions shall be reported in accordance with Section 25-190 (3).

(10) Each kraft mill shall furnish, upon request of the Department, such other pertinent data as the Department may require to evaluate the mill's emission control program.

25-190 UPSET CONDITIONS

(1) Each mill shall immediately report abnormal mill operations including control and process equipment maintenance, or breakdowns which result in violations of regulatory or air contaminant discharge permit limits. The mill shall also take immediate corrective action to reduce emission levels to regulatory or permit levels.

(2) Significant upsets shall be reported in writing with an accompanying report on measures taken or to be taken to correct the condition and prevent its reoccurrence.

(3) Each mill shall report the cummulative duration in hours each month of the upsets reported in subsection (1) and classified as to:

(a) Recovery Furnace

(i) TRS

(ii) Particulate

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(b) Lime Kiln

(i) TRS

(ii) Particulate

(c) Smelt Tank Particulate

OAR 340-25-195 IS HEREBY REPEALED.

OAR 340-25-200 IS HEREBY REPEALED.

A new OAR 340-25-205 is hereby adopted to read as follows:

25-205 CHRONIC UPSET CONDITIONS

If the Department determines that an upset condition is chronic and correctable by installing new or modified process or control procedures or equipment, a program and schedule to effectively eliminate the deficiencies causing the upset conditions shall be submitted. Such reoccurring upset conditions causing emissions in excess of applicable limits may be exempted from Section 21-065 and 21-070 through 21-075 and may be subject to civil penalty or other appropriate action.

Emission Standards

340-25-265 (1) The exhaust gases from each primary aluminum plant constructed on or after January 1, 1973, shall be collected and treated as necessary so as not to exceed the following minimum requirements:

(c) Visible emissions from any source shall not exceed ten (10) percent opacity or 0.5 on the Ringlemann Smoke Chart at any time.

(3) The exhaust gases from each primary aluminum plant constructed on or before January 1, 1973, shall be collected and treated as necessary so as not to exceed the following minimum requirements:

(c) Visible emissions from any source shall not exceed 20 percent opacity or 1.0 on the Ringlemann Smoke Chart at any time.

Veneer and Plywood Manufacturing Operations

340-25-315 (1) Veneer Dryers:

(a) Consistent with section 340-25-310(1) through (4), it is the objective of this section to control air contaminant emissions, including, but not limited to, condensible hydrocarbons such that visible emissions from each veneer dryer located outside special problem areas are limited to a level which does not cause a characteristic "blue haze" to be observable.

(b) No person shall operate any veneer dryer outside a special problem area such that visible air contaminants emitted from any dryer stack or emission point exceed:

(A) A design opacity of 10%,

(B) An average operating opacity of 10%, and

(C) A maximum opacity of 20%.

Where the presence of uncombined water is the only reason for the failure to meet the above requirements, said requirements shall not apply.

Minimum Emission Standards

340-25-360 (1) Notwithstanding the specific emission limits set forth in this section, the Department of Environmental Quality may, after notice and hearing, establish more restrictive emission limits and compliance schedules for mills located in recognized problem areas, for new mills, for mills expanding existing facilities, for mills installing substantial modifications of existing facilities which result in increased emissions; or for mills in areas where it is shown ambient air standards are exceeded.

(2) The total average daily emissions from a sulfite pulp mill shall not exceed 20 pounds of sulfur dioxide per ton of air dried unbleached pulp produced and in addition:

(a) the blow system emissions shall not exceed 0.2 pounds of sulfur dioxide per minute per ton of unbleached pulp (charged to digester) on a 15 minute average.

(b) Emissions from the recovery system, acid plant and other sources, shall not exceed 800 ppm of sulfur dioxide as an hourly average.

(3) Mills of less than 110 ton of air dried unbleached pulp per day may be exempted from the limitations of subsection (2) above provided:

(a) That the schedule of compliance required by section 340-25-365 demonstrates that a minimum of 50% collection efficiency will be maintained and that compliance will be achieved within 1 year.

(b) That the schedule of compliance required by section 340-25-365 demonstrates that a minimum of 80% collection efficiency for SO_2 will be maintained and compliance will be achieved no later than December 31, 1975.

(c) That an approved program continually monitors ambient air to demonstrate compliance with State and Federal ambient air standards, and that a five (5)

Monitoring and Reporting

340-25-370 (1) Each mill shall submit, within sixty (60) days of the date of adoption, a detailed sampling and testing program and time schedule for approval by the Department.

(2) The monitoring equipment shall be capable of determining compliance with the emission limits established by these regulations, and shall be capable of continual sampling and recording of concentrations of sulfur dioxide contaminants from the recovery system.

(3) Each mill shall sample the recovery system, blow system, and acid plant for sulfur dioxide emissions on a regularly scheduled basis.

(4) Each mill shall sample the recovery furnace stacks for particulate on a regularly scheduled basis.

(5) Unless otherwise authorized, data shall be reported by each mill at the end of each calendar month as follows:

(a) Average daily emissions of sulfur dioxides expressed as pounds of sulfur dioxide per ton of pulp produced from the blow system, recovery system, and acid plant.

(b) The daily average and peak concentrations of sulfur dioxides expressed in pounds per hour and expressed in ppm of sulfur dioxide and the number of hours each day that the concentration exceeds 500 ppm.

(c) The average daily production of unbleached pulp and the maximum daily production.

(d) Mills operating under the provisions of section 340-25-360(3) shall report the results of their ambient monitoring monthly.

(6) Each mill shall furnish upon request of the Department, such other pertinent data as the Department may require to evaluate the mill's emission control program. Unless otherwise prescribed, each mill shall report immediately to the Department abnormal mill operations which adversely affect the emission of air contaminants.

(7) All measurements shall be made in accordance with techniques approved by the Department. Interim procedures may be approved for use prior to completion of the studies required by section 340-25-375.

Statutory Authority:
Hist: Filed 11-23-71 as DEQ 32, Eff. 12-15-71

Emission Standards

340-25-415 (1) No source shall have visible emissions in excess of twenty (20) percent opacity, provided that where the presence of uncombined water is the only reason for failure of an emission to meet this requirement, such requirement shall not apply.

(2) The total combined emission of particulate matter from all sources shall not exceed 3.5 pounds per ton of dry laterite ore produced, based upon the average dry laterite ore production rate.

Statutory Authority:
Hist: Filed 2-15-72 as DEQ 37, Eff. 3-1-72

ARTICLE III

§ 123.21. General.

(a) This section shall apply to all sources except those subject to other provisions of this Article, with respect to the control of sulfur compound emissions.

(b) No person shall cause, suffer, or permit the emission into the outdoor atmosphere of sulfur oxides, from any source, in such a manner that the concentration, at any time, of the sulfur oxides, expressed as SO_2, in the effluent gas exceeds 500 parts per million, by volume (dry basis).

§ 123.22. Combustion units.

(a) *Prohibited emissions in general.* This subsection shall apply to all combustion units in all the air basins except those units subject to the provisions of subsection (b) of this section. No person shall cause, suffer, or permit the emission into the outdoor atmosphere of sulfur oxides, expressed as SO_2, from any combustion unit, at any time, in excess of any of the following:

(1) The rate of three pounds per million B.t.u. of heat input when the heat input to the combustion unit in millions of B.t.u.'s per hour is greater than 2.5 but less than 50.

(2) The rate determined by the following formula:

$A = 5.1E^{-0.14}$, where:
A = Allowable emissions in pounds per million B.t.u. of heat input, and
E = Heat input to the combustion unit in millions of B.t.u. per hour,

when E is equal to or greater than 50 but less than 2,000.

(3) The rate of 1.8 pounds per million B.t.u. of heat input when the heat input to the combustion unit in millions of B.t.u.'s per hour is equal to or greater than 2,000.

§ 123.23. By-product coke oven gas.

(a) No person shall cause, suffer or permit the emission of by-product coke oven gas into the outdoor atmosphere unless such gas is first burned.

(b) No person shall cause, suffer or permit the flaring or combustion of any coke oven by-product gas that contains sulfur compounds, expressed as equivalent hydrogen sulfide, in concentrations greater than 50 grains per 100 dry standard cubic feet. The sulfur compounds, expressed as equivalent hydrogen sulfide, emitted into the outdoor atmosphere from any tail gas sulfur recovery equipment utilized in a coke oven gas desulfurization system approved by the Department may be included in the determination of these concentrations.

(c) The provisions of section 123.23(a) and section 123.23(b) shall not apply to emissions of coke oven gas from (1) an oven (or ovens) which is (are) dampered off: (i) prior to and during the pushing operation of said oven, (ii) because of some malfunction associated with said oven; (2) unavoidable oven leakage occurring during the coking cycle.

(d) The provisions of Chapter 129, subsections 129.12 and 129.13, shall not be applicable to processes operated in conjuction with the desulfurization of by-product coke oven gas, provided that the standards set forth in Chapter 123, subsection 123.23, have been complied with.

PENNSYLVANIA

ARTICLE III

§ 123.24. Primary zinc smelters.

(a) No person shall cause, suffer, or permit the emission into the outdoor atmosphere of sulfur oxides, from any zinc roasting operation, in such a manner that the concentration of sulfur oxides, expressed as SO_2 in the effluent gas exceeds 500 parts per million by volume (dry basis) calculated as a two hour moving average.

§ 123.41. Limitations.

No person shall cause, suffer, or permit the emission into the outdoor atmosphere of visible air contaminants in such a manner that the opacity of the emission is:

(1) equal to or greater than 20% for a period or periods aggregating more than 3 minutes in any one hour; or

(2) equal to or greater than 60% at any time.

PENNSYLVANIA

ARTICLE III

§ 139.1. Sampling facilities.

Upon the request of the Department, the person responsible for a source shall provide adequate sampling ports, safe sampling platforms and adequate utilities for the performance by the Department of tests on such source. The Department shall set forth, in the request, the time period within which the facilities shall be provided as well as the specifications for the said facilities.

§ 139.2. Sampling by others.

Sampling and testing done by persons other than the Department may be accepted by the Department provided that:

(1) The Department has been given reasonable notice of the sampling and testing and has been given reasonable opportunity to observe and participate in the sampling and testing.

(2) The sampling and testing is conducted under the direct supervision of persons qualified, by training and experience, to conduct such sampling and testing.

(3) Procedures for the sampling and testing are in accord with the provisions of this Chapter.

(4) The reports of the sampling and testing are accurate and comprehensive.

§ 139.13. Emissions of SO_2, H_2S and NO_2.

The following are applicable to tests for determining emissions of SO_2, H_2S and NO_2 from stationary sources:

(1) Test methods for SO_2, H_2S and NO_2 shall provide for at least 95% collection efficiency of oxides of sulfur, hydrogen sulfide and oxides of nitrogen, respectively.

(2) Sample collection for SO_2 shall be at a rate proportional to the stack gas velocity and the weight of oxides of sulfur shall be determined gravimetrically.

(3) Test methods and procedures for SO_2 shall be equivalent to or modified to produce results equivalent to those which would be obtained by employing the procedures specified in § 139.4 (2) of this Title (relating to references). The equipment shall be inert where appropriate and similar to that specified in § 139.4 (2) of this Title.

(4) Sample collection for H_2S shall be at a rate proportional to the stack gas velocity and the weight of hydrogen sulfide shall be determined colorimetrically.

(5) Test methods and procedures for H_2S shall be equivalent to or modified to produce results equivalent to those which would be obtained by employing the procedures specified in § 139.4 (4) of this Title (relating to references). The equipment shall be inert where appropriate and similar to that specified in § 139.4 (2) of this Title (relating to references).

(6) For determining emissions of SO_2 and H_2S, the minimum sampling time shall be one hour and the minimum sample volume shall be 30 cubic feet corrected to standard conditions (dry basis).

(7) Test methods and procedures and equipment for NO_2 shall be similar to those specified in § 139.4 (1) of this Title (relating to references).

(8) Results shall be reported as pounds per hour of SO_x as SO_2, pounds per hour of H_2S, or pounds per hour of NO_x as NO_2 and in accordance with units specified in § § 123.21 - 123.24 and 129.11 - 129.13 of this Title (relating to standards for contaminants and sources).

Subchapter B. MONITORING DUTIES OF CERTAIN SOURCES

§ 139.51. Purpose.

The intent of this Subchapter is to require the periodic monitoring of air contaminants emitted from certain sources which have, or are likely to have, a substantial impact on the maintenance of ambient air quality standards or may cause air pollution. The identification of sources subject to this Subchapter, or the establishment of a specific frequency of source emission monitoring in this Subchapter, shall not be construed to limit the Department's authority pursuant to §4 of the Act or §§127.12 and 127.22 of this Title (relating to contents of applications) to establish monitoring requirements for other sources, or additional monitoring requirements for sources subject to this Subchapter.

§ 139.52. Monitoring methods and techniques.

Persons responsible for the operation of sources subject to monitoring requirements established by order, by condition of plan approval or permit, or pursuant to this Subchapter, shall:

(1) conduct source testing or air sampling and perform analyses in accordance with the requirements of Subchapter A of this Chapter, or shall install, operate, and maintain a device approved by the Department for installation in a flue for the purpose of continuous measurement of specific air contaminants; and

(2) perform visible emission observations in accordance with the methods for observing and recording visible emissions established pursuant to Chapter 123 of this Title (relating to standards for contaminants); provided, however, visible emissions discharged through a flue may also be monitored by use of a device approved by the Department for installation in a stack for the purpose of measuring opacity.

§ 139.53. Filing monitoring reports.

(a) Persons responsible for the operation of sources subject to monitoring requirements established by order, by condition of plan approval or permit, or pursuant to this Subchapter, shall submit periodic reports of the results of any tests, samples, or observations conducted, obtained, or made in accordance with the methods or techniques referenced in §139.52 of this Title (relating to monitoring methods and techniques). Such reports shall be:

(1) submitted on forms supplied, or in a format specified by the Department;

(2) sworn by the person exercising managerial responsibility over the operation of the source for which monitoring is required;

(3) submitted on the schedule established by order, condition of plan approval or permit, or this Subchapter; and

(4) submitted in duplicate to the Regional Air Pollution Control Engineer for the region of the Department in which the source is located.

(b) In addition to the information required by subsection (a) of this section, the Department may, by use of a standard form or by written notice, require information regarding test methods, test conditions, operating conditions of the source, or any other information which may be necessary to properly evaluate the results of emissions monitoring performed at a source.

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Sources

§ 139.61. Requirements.

(a) Persons responsible for the operation of any source included in any class of sources listed in the first column of Table I of this Chapter shall do the following:

(1) Conduct source tests, air sampling, and analyses or perform visual observations of the air contaminants specified by name or by reference to an applicable emission standard in the second column of Table I.

(2) Conduct the required tests, sampling, analyses, or observations at the frequency required by the third column of Table I.

(3) Submit monitoring reports in accordance with the requirements of § 139.53 of this Title (relating to filing monitoring reports) at the frequency specified in the fourth column of Table I.

(b) Table I follows:

TABLE I

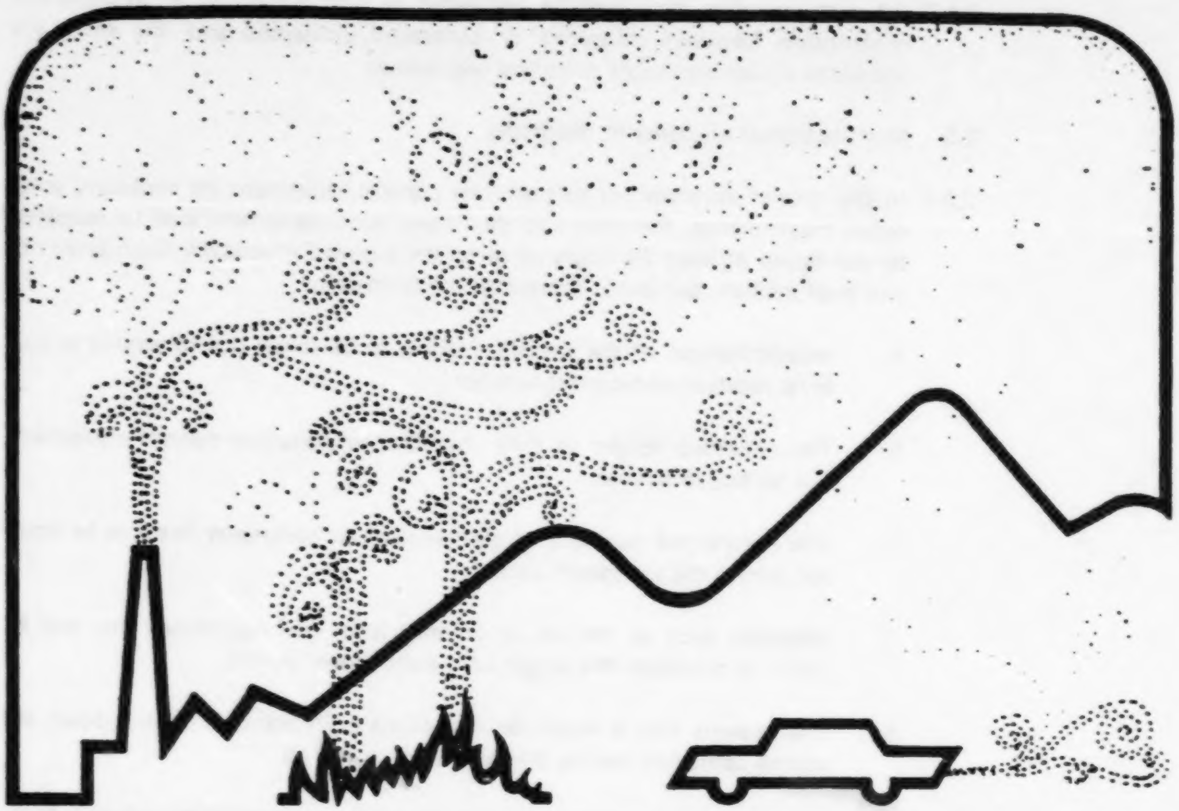
Class of Sources	Air Contaminants to be Monitored	Frequency of Testing, Sampling or Observations	Frequency of Filing Monitoring Reports
Coke oven batteries	§ 123.44(a)(1),(3),(4),(5),(6)&(7)	Daily during daylight	Quarterly
Pushing	§ 123.13(b)	Annual	Annual
Waste heat stack	§ 123.13(c)	Annual	Annual

Source

The provisions of this Subchapter B adopted July 26, 1977, Sections 139.51, 139.52, and 139.53 effective August 29, 1977, Section 139.61 effective September 15, 1977, 7 Pa. B. 2251.

COMMONWEALTH OF PUERTO RICO / OFFICE OF THE GOVERNOR

Environmental
Quality Board



A REGULATION FOR THE CONTROL OF ATMOSPHERIC POLLUTION

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2.3 (Reserved)

2.4 Emission data availabe to public; presentation

2.4.1 All emission data obtained by the Board, including data reported pursuant to section 2.2 and data obtained in any other way, shall be availabe for public inspection and may also be made available to the public in any additional ways that the Board may deem appropriate.

2.4.2 All such emission data shall be presented in such a manner as to show the relationship between measured or estimated emissions and the emissions allowable under applicable rules and regulations.

2.5 Malfunction of equipment; reporting

2.5.1 In the case of shutdown of air pollution control equipment for necessary scheduled maintenance, the intent to shut down such equipment shall be reported to the Board at least 24 hours prior to the planned shutdown. Such prior notice shall include, but is not limited to the following:

A. Indentification of the specific facility to be taken out of service as well as its location and permit number.

B. The expected lenght of time that the air pollution control equipment will be out of service.

C. The nature and quantity of emissions of air pollutants likely to be emitted during the shutdown period.

D. Measures such as the use of off-shift labor and equipment that will be taken to minimize the length of the shutdown period.

E. The reasons that it would be impossible or impractical to shut down the source operation during the maintenance period.

2.5.2 In the event that any emission source, air pollution control equipment, or related facility breaks down in such a manner as to cause the emission of air pollutants in violation of applicable rules and regulations, the person responsible for such equipment shall immediately notify the Board of such failure or breakdown and provide a statement giving all pertinent facts, including the estimated duration of the breakdown. The Board shall be notified when the condition causing the failure or breakdown has been corrected and the equipment is again in operation. Upon request of the Board, this notification shall be followed by a written report of the incident. This report shall include

ARTICLE 5 - CONTROL OF PARTICULATE EMISSIONS

5.1 Visible emissions

5.1.1 Visible emission restrictions for stationary sources.

A. No person shall cuase or permit the emission of visible air pollutants of a shade or density equal to or darker than that designated as No. 1 on the Ringelmann chart or 20 per cent opacity.

B. Nevertheless, a person may discharge into the atmosphere from any single source of emission, for a period or periods aggregating not more than 4 minutes in any 30 minutes, air pollutants of a shade or density not darker than No. 3 on the Ringelmann chart or 60 per cent opacity.

5.1.2 Visible emission restrictions for motor vehicles

A. No person shall cause or permit the emission of visible air pollutants from gasoline-powered motor vehicles for longer than 5 consecutive seconds.

B. No person shall cause or permit the emission of visible air pollutants from diesel-powered motor vehicles of a shade or density equal to or darker than that designated as No. 1 on the Ringelmann chart or 20 per cent opacity for longer than 5 consecutive seconds.

5.2 Fugitive dust

5.2.1 No person shall cause or permit any materials to be handled, transported, or stored; or a building, its appurtenances, or a road to be used, constructed, altered, repaired or demolished without taking reasonable precautions to prevent particulate matter from becoming airborne. Such reasonable precautions shall include, but not be limited to, the following:

A. Use, where possible, or water or chemicals for control of dust in the demolition of existing buildings or structures, construction operations, quarrying operations, the grading of roads, or the clearing of land;

B. Application of asphalt, oil, water, or suitable chemicals on dirt roads, materials stockpiles, and other surfaces which can give rise to airborne dusts;

C. Installation and use of hoods, fans, and fabric filters to enclose and vent the handling of dusty materials. Adequate containment methods shall be employed during sandblasting or other similar operations;

ARTICLE 6 - CONTROL OF SULFUR COMPOUND EMISSIONS

6.1 Fuel combustion

6.1.1 Sulfur content in fuel

Except as authorized by subsections 6.1.4, 6.1.5 and 6.1.6., no person shall burn, nor shall any person sell or otherwise make available for burning in fuel burning equipment, any fuel containing in excess of the following percentages of sulfur by weight:

A. After October 1, 1973: 2.0 per cent sulfur
B. After April 1, 1974: 1.5 per cent sulfur
C. After April 1, 1975: 1.0 per cent sulfur

6.1.2 Critical SO_2 source areas

After April 1, 1975, in the municipalities of San Juan, Cataño, Guaynabo, and Bayamón, no person shall, except as authorized by subsections 6.1.4, 6.1.5, and 6.1.6, burn any fuel containing in excess of 0.5 per cent sulfur by weight.

6.1.3 Effective dates

Notwithstanding subsection 3.2.1, all stationary sources shall be in compliance with subsections 6.1.1 and 6.1.2 at all times on and after the effective dates specified in those subsections.

6.1.4 Equivalent emission authorized

Nevertheless, the Board may authorize the burning, sale, or otherwise making available of fuel with higher sulfur content if an applicant demonstrates to its satisfaction that:

A. An industrial process, or atmospheric pollution control equipment, or both combined, will result in the removal of sulfur compounds from combustion gases emitted by a source, and

B. As a result of such removal, sulfur compound emissions from that source will not exceed those that would result if the fuel required by subsections 6.1.1 and 6.1.2 were burned without such removal.

Such authorization shall be granted only by means of a permit or compliance plan that specifies the maximum percentages of sulfur in the authorized fuel.

6.1.5 Ship bunkering

Subsections 6.1.2 shall not apply to ship bunkering.

6.1.6 Review of sub-sections 6.1.1 and 6.1.2

A. The Board shall undertake a continuing program of air quality surveillance in order to obtain accurate measurements of ambient air quality in Puerto Rico.

B. On or before June 30, 1973, December 31, 1973, June 30, 1974, and June 30 of each succeeding year, the Board shall:

1. Publicly release accurate measurements and estimates of ambient air quality in Puerto Rico.

2. Publicly release a tentative determination that ambient air quality in Puerto Rico is or is not, as the case may be, in compliance with national ambient air quality standards.

3. Publicly release a tentative determination, on the basis of the most reliable data then available, whether subsections 6.1.1 and 6.1.2 are, in whole or in part, either more restrictive or less restrictive than is necessary to achieve and maintain compliance with national ambient air quality standards.

4. Give public notice of a public hearing to be held no later than 35 days after such notice, to consider the tentative determinations listed in subparagraphs (2) and (3) above, together with any other matters the Board may deem appropriate. Such notice shall comply with subsection 3.6.3.

C. Such public hearing shall thereafter be held. Within 30 days after the conclusion of such hearing, the Board shall make and publicly announce its determination with respect to each of the matters described in subparagraphs (2) and (3) of paragraph (B) above. Provided that if the concentrations of SO_2 are found to be within the national ambient air quality standards, the Board shall so announce and may amend subsections 6.1.1 and 6.1.2, as necessary to maintain those standards

6.1.7 No person shall cause or permit the flaring or combustion of any refinery process gas stream or any other process gas stream that contains sulfur compounds measured as hydrogen sulfide in concentrations greater than 10 grains per 100 standard cubic feet (23 gm/100 scm) of gas. This subsection shall not prohibit emergency releases, necessary for safety, and which are reported to the Board in the manner described in subsection 2.5.2.

6.2 Sulfuric acid plants

No person shall cause or permit sulfur dioxide emissions which exceed 6.5 pounds per ton (3.25 kg/metric ton) of 100 per cent acid produced.

6.3 Sulfur recovery plants

No person shall cause or permit the emission of sulfur oxides, calculated as sulfur dioxide, from a sulfur recovery plant to exceed 0.10 pounds (kg.) per pound (kg.) of sulfur processed.

6.4 Nonferrous smelters

No person shall cause or permit the emission of sulfur oxides, calculated as sulfur dioxide, from primary nonferrous smelters to exceed that set forth according to the following equations:

Copper smelters: $Y = 0.1X$
Zinc smelters: $Y = 0.564\, X^{0.85}$
Lead smelters: $Y = 0.98\, X^{0.77}$

Where X is the total sulfur fed to the smelter in lb./hr. and Y is the allowable sulfur dioxide emissions in lb/hr.

6.5 Sulfite pulp mills

No person shall cause or permit the total sulfite pulp mill emissions of sulfur oxides, calculated as sulfur dioxide, from blow pits, washer vents, storage tanks, digester relief, recovery system, etc., to exceed 9.0 pounds per air-dried ton (4.5 kg./metric ton) of pulp produced.

RHODE ISLAND

REGULATION 1

1.2 Limitations

No person shall emit into the atmosphere from any source any air contaminant for a period or periods aggregating more than three minutes in any one hour which is greater than or equal to 20 percent opacity.

1.3 Test Procedure and Observer Qualifications

1.3.1 All tests must be performed as per the Code of Federal Regulations, Title 40, Part 60, Appendix A, Method 9.

1.3.2 All observers must qualify as per the Code of Federal Regulations, Title 40, Part 60, Appendix A, Method 9.

REGULATION 6

6.1 Definitions

As used in these regulations, the following terms shall, where the context permits, be construed as follows:

6.1.1 "Opacity monitor" means a photoelectric smoke detector which is permanently installed in breeching or stack.

6.2 Requirements

6.2.1 The following fossil fuel fired steam or hot water generating units shall be equipped with an opacity monitor with audio alarm:

(a) All units burning No. 6 residual oil or solid fuel.

(b) Units burning all other liquid fuels and having a heat input capacity of five million Btu per hour or more.

6.2.2 These devices shall be calibrated to sound the alarm at 20 percent opacity and operated continuously during combustion of fuel. If more than one unit is served by a single stack, this requirement may be met with a single device located to detect any visible products of combustion from each unit. The audio alarm must be located in an area where it will be heard by the operator of or other person responsible for the unit(s).

SOUTH CAROLINA

STANDARD NO. 1
SMOKE EMISSION

SECTION I

EXISTING SOURCE

A. No one shall discharge to the ambient air from any source existing or under construction prior to February 11, 1971, smoke of a shade as dark or darker than No. 2 on the Ringelmann Chart. For a total of five (5) minutes in one hour or twenty (20) minutes in a 24-hour period, Ringelmann Scale No. 2 may be exceeded for start-up, shut-down, soot blowing or equipment change but shall not exceed Ringelmann Scale No. 3.

B. Smoke, exclusive of condensed water vapor, from fuel burning shall not obscure an observer's view to a degree as great as or greater than does smoke designated as No. 2 on the Ringelmann Chart.

SECTION II

NEW SOURCES

A. No one shall discharge to the outside atmosphere from any single source constructed on or after February 11, 1971, smoke of a shade as dark or darker than No. 1 on the Ringelmann Chart. For a total of five (5) minutes in one hour or twenty (20) minutes in a twenty-four hour period, Ringelmann Scale No. 1 may be exceeded for a start-up, shut-down, soot blowing or equipment change but shall not exceed Ringelmann Scale No. 3.

B. Smoke, exclusive of condensed water vapor, from fuel burning shall not obscure an observer's view to a degree as great as or greater than does smoke designated as No. 1 on the Ringelmann Chart.

STANDARD NO. 2

SECTION I

C. The owner or operator of any fossil fuel-fired steam generator of more than 250 million BTU per hour heat input shall install, calibrate, operate, and maintain no later than June 14, 1978, continuous monitoring system(s) for the measurement of opacity which meets the performance specifications of Paragraph I of this Standard except where:

1. Gaseous fuel is the only fuel burned;

2. Oil or a mixture of gas and oil are the only fuels burned and the steam generator is able to comply with the provisions of Standard No. 2 Paragraph A and Standard No. 1, Section I or Section II, of this regulation without utilization of particulate matter collection equipment, and where the steam generator has never been found, through any administrative or judicial proceedings, to be in violation of Standard No. 1, Section I or Section II of this regulation;

SOUTH CAROLINA

STANDARD 2 - SECTION I

3. The steam generator operates with an annual average capacity factor of 30 percent or less, as reported to the Federal Power Commission for calendar year 1974 or otherwise adequately demonstrated to the Department; and has not subsequently increased this factor to more than 30 percent; or

4. The steam generator is scheduled for retirement on or before October 6, 1980, and provided adequate evidence and guarantees are submitted to the Department which clearly show that the generator will cease operations no later than this date.

F. The owner or operator of any steam generator subject to the provisions of paragraph C of this Standard shall submit a written report to the Department at least quarterly, or more often if requested. This report shall include, as a minimum, all integrated one minute opacity measurements for the periods during which either of the provisions of Standard No. 1, Section I or Section II of this regulation have been exceeded; the nature and cause, if known, of all reported opacity measurements; the data and time identifying each period during which the monitoring system was inoperative, except for zero and span checks; the nature of monitoring system repairs or adjustments; and proof of opacity monitoring system repairs or adjustments; and proof of opacity monitoring system performance whenever system repairs or adjustments have been made. During periods when no excess opacity measurements are recorded and the monitoring system(have not been inoperative, repaired or adjusted, the report shall include information to this effect.

G. Alternate data reporting procedures may be allowed if the owner or operator shows, to the satisfaction of the Department, that these procedures are at least as accurate as those in Paragraph F of this Standard.

H. The owner or operator shall maintain a file of all information contained in the quarterly reports; calibration data for the opacity monitoring system(s); relevant records of adjustments and maintenance performed on such system(s); and all other data collected by the continuous opacity monitoring system(s) for a minimum of two years from the date of submission of such reports or collection of such data.

SOUTH CAROLINA

STANDARD 2 -SECTION I

I. The continuous opacity monitoring system(s) required by Paragraph C of this Standard shall conform with the performance specifications set forth in 40CFR, Part 60, Appendix B, Performance Specification 1 which is incorporated by reference as a part of this Standard except that where the term "Administrator" is used the term "Department" shall be substituted. In addition, the opacity monitoring system(s) shall complete a minimum of one cycle of operation for each successive 10-second period; be installed such that representative measurements of opacity from the affected steam generator are obtained; and have an instrument span of approximately 80 percent opacity. Any owner or operator who has purchased opacity monitoring system(s) prior to September 11, 1974, shall be exempt from meeting such test procedures prescribed in 40 CFR, Part 60, Appendix B, Performance Specification 1 until December 14, 1981.

J. The owner or operator shall record the zero and span drift in accordance with method prescribed by the manufacturer of such opacity monitoring system(s); subject the system(s) to the manufacturer's recommended zero and span check at least once daily unless the manufacturer has recommended adjustments at shorter intervals, in which case such recommendations shall be followed; adjust the zero and span whenever the 24-hour zero drift or 24-hour calibration drift limits of 40 CFR, Part 60, Appendix B, Performance Specification 1 are exceeded; adjust the opacity monitoring system(s) purchased prior to September 11, 1974 whenever the 24-hour zero drift or 24-hour calibration drift exceeds 4 percent opacity for those generators constructed prior to February 11, 1971 and 2 percent opacity for those generators constructed after February 11, 1971.

K. When the effluents from two or more affected steam generators of similar design and operating characteristics are combined before being released to the atmosphere, the opacity monitoring system(s) shall be installed on the combined effluent. When the affected steam generators are not of similar design and operating characteristics, or when the effluent from one affected steam generator is released to the atmosphere through more than one point, the owner or operator shall apply for an alternate procedure to comply with the requirements of this Standard.

L. Whenever the requirements for continuous opacity monitoring cannot be implemented by the owner or operator due to physical plant limitations, extreme economic burden, or infrequent steam generator operation of less than 30 days per year, or when the specified monitoring procedure would not provide accurate opacity determinations, alternate monitoring and reporting requirements may be approved on a case-by-case basis provided the owner or operator submits a written request to the Department which includes, but not limited to:

SOUTH CAROLINA

STANDARD 2 - SECTION I

1. The basis or reason(s) that alternate requirements are necessary;

2. A proposal of the alternate monitoring and reporting requirements; and

3. Any other information needed by the Department to make a determination that the alternate requirements are adequate to meet the intent of this Standard.

SECTION II

SULFUR DIOXIDE EMISSIONS

A. The maximum allowable discharge of sulfur dioxide (SO_2) from fuel burning operations shall be in accordance with a system of priorities as specified hereinafter in paragraph B. The classifications shall be delineated on a county basis. The maximum allowable discharge for the various classes is specified in paragraph C of this Section.

B. 1. The class into which a given county falls has been determined by mathematical atmosphere diffusion models and other methods which evaluate those factors which necessitate limits on sulfur dioxide emissions. These factors include but were not limited to: (1) total sulfur dioxide emissions; (2) spatial distribution of sulfur dioxide sources; (3) effects of single, large sources; (4) existing, measured air quality; (5) topographical features of the county; (6) contributions to background levels due to sources outside the county being considered; (7) population density.

2. The assigned classifications will be reviewed periodically at intervals not to exceed three years, and changes will be made as required. When a county is assigned to a more restrictive class, individual compliance schedules will be established in such a way that reasonable time will be allowed for the sources to make necessary changes in equipment and/or fuel contracts.

3. The following classifications will be effective after January 30, 1974, and will remain in effect until changed by the procedure described in subparagraph 2.

Class I - Charleston County

Class II - Aiken County - Anderson County

Class III - All others

SOUTH CAROLINA

STANDARD 2 - SECTION II

C. After January 30, 1974, sulfur dioxide emissions from fuel burning sources located in various counties will not exceed the following limits:

1. Counties in Class I

Rated Source Size	Maximum Allowable Emissions (lb SO_2/million BTU Input)
Up to and including 10 million BTU/hr.	3.5
Greater than 10 million BTU/hr	2.3

STANDARD NO. 4
INCINERATORS

SECTION I

REQUIREMENTS FOR EXISTING INCINERATORS

A. All existing incinerators shall operate within the following maximum emission limitations:

2. Emissions shall not produce smoke, the shade or appearance of which is greater than No. 2 (or equivalent opacity) of the Ringelmann Smoke Chart, for an aggregate of more than five (5) minutes in any one hour or twenty (20) minutes in a twenty-four hour period.

B. All existing incinerators must conform to the requirements for New Incinerators in Section II below, after December 31, 1973.

SECTION II

B. All new incinerators shall operate within the following minimum emission limitations:

2. Emissions shall not produce smoke the shade or appearance of which is as dark or darker than No. 1 of the Ringelmann Chart, or equivalent opacity, for an aggregate of more than three (3) minutes in any one hour or fifteen (15) minutes in a twenty-four hour period.

SOUTH CAROLINA

STANDARD NO. 5

EMISSION FROM PROCESS INDUSTRIES

SECTION I

SULFURIC ACID MANUFACTURING PLANTS

The rate of emission of sulfur dioxide from sulfuric acid manufacturing plants shall be limited to 10 pounds per ton of 100% acid produced and emissions of acid mist to 0.5 pounds of sulfuric acid per ton of 100% acid produced. The Board further requires that all sulfuric acid manufacturing plants shall emit no more than 4 pounds of sulfur dioxide per ton of 100% sulfuric acid produced by July 1, 1977.

SOUTH DAKOTA

34:10:03:01 Restrictions on visible emissions. No person shall discharge into the ambient air from any single source of emissions whatsoever, any air contaminant of a shade or density equal to or darker than that designated as No. 1 on the Ringelmann chart or twenty per cent opacity.

General Authority: SDCL 34-16A-12. Law Implemented: SDCL 34-16A-22.

34:10:03:02 Brief emissions in excess of restrictions permitted. A person may discharge into the atmosphere from any single source of emission, for a period or periods aggregating not more than three minutes in any sixty consecutive minutes, air pollutants of a shade or density not darker than No. 3 on the Ringelmann chart or sixty per cent opacity.

General Authority: SDCL 34-16A-12. Law Implemented: SDCL 34-16A-22.

34:10:03:04 Exceptions granted to wood waste burners. A wood waste burner may discharge into the atmosphere for a period or periods aggregating not more than one hour in any twenty four hours, air pollutants of a shade or density that in this exemption will apply only during periods of startup, building, and shutdown of fires in wood waste burners.

General Authority: SDCL 34-16A-12. Law Implemented: SDCL 34-16A-22.

34:10:06:01. Emission restrictions for incinerators. No person shall cause or permit any incinerator or wood waste burner to emit pollutants of a shade or density equal to or darker that that designated as no. 1 on the Ringlemann chart or twenty percent opacity. Furthermore, no fly ash emitted from such sources shall have a greater dimension than one hundred microns. No other emission limitations shall apply to these sources except as found in chapter 34:10:03.

General Authority: SDCL 34-16A-12. Law Implemented: SDCL 34-16A-24.

SOUTH DAKOTA

34:10:07:03 Control applicable to fuel burning installations. No person shall cause or permit the emission of sulfur dioxide to the ambient air from any fuel burning installation in an amount greater than three pounds of sulfur dioxide per million Btu's of heat input to the installation.

General Authority: SDCL 34-16A-12. Law Implemented: SDCL 34-16A-24.

34:10:12:13. Standard for particulate matter for fossil fuel fired generators. On and after the date on which the performance test required to be conducted by § § 34:10:12:04 through 34:10:12:09 inclusive is completed, no owner or operator subject to § 34:10:12:12 shall cause to be discharged into the atmosphere from any fossil fuel fired steam generators gases which:

(1) Contain particulate matter in excess of 0.18 grams per million calories heat input (0.10 pound per million British Thermal Units) derived from fossil fuel; and

(2) Exhibit greater than twenty per cent opacity except that a maximum of forty per cent opacity shall be permissible for not more than two minutes in any hour. Where the presence of uncombined water is the only reason for failure to meet the requirements of this paragraph, such failure will not be a violation of this section.

General Authority: SDCL 34-16A-12. Law Implemented: SDCL 34-16A-24.

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34:10:12:14. Standard for sulfur dioxide for fossil fuel fired generators. On and after the date on which the performance test required to be conducted by § § 34:10:12:04 through 34:10:12:09 inclusive is completed, no owner or operator subject to § 34:10:12:12 shall cause to be discharged into the atmosphere from any fossil fuel fired generator facili any gases which contain sulfur dioxide in excess of:

(1) 1.4 grams per million calories heat input (0.8 pounds per million British Thermal Units) derived from liquid fossil fuel; and

(2) 2.2 grams per million calories heat input (1.2 pounds per million British Thermal Units) derived from solid fossil fuel.

General Authority: SDCL 34-16A-12. Law Implemented: SDCL 34-16A-24.

34:10:12:15. Determination of[4] sulfur dioxide standard for fossil fuels burned simultaneously in combination - Formula. When different fossil fuels are burned simultaneously in any combination, the applicable standard shall be determined by proration using the following formula:

$$\frac{y(1.4) + z(2.2)}{y + z}$$

where:

"y" is the percentage of total heat input derived from liquid fossil fuel, and "z" is the percentage of total heat input derived from soild fossil fuel.

General Authority: SDCL 34-16A-12. Law Implemented: SDCL 34-16A-19.

34:10:12:16. Basis of compliance with sulfur dioxide standards for fossil fuel fired generators. Compliance shall be based on the total heat input from all fossil fuels burned, including gaseous fuels.

General Authority: SDCL 34-16A-12. Law Implemented: SDCL 34-16A-19.

34:10:12:17. Emission and fuel monitoring for fossil fuel fired generators. There shall be installed, calibrated, maintained, and operated, in any fossil fuel fired steam generating unit subject to the provisions of this chapter, emission monitoring instruments as follows:

(1) A photoelectric or other type smoke detector and recorder, except where gaseous fuel is the only fuel burned; and

(2) An instrument for continuously monitoring and recording sulfur dioxide emissions, except where gaseous fuel is the only fuel burned, or where compliance is achieved through low sulfur fuels and representative sulfur analysis of fuels are conducted daily in accordance with § § 34:10:12:19 and 34:10:12:20.

General Authority: SDCL 34-16A-12. Law Implemented: SDCL 34-16A-19.

34:10:12:18. Capability of instruments and sampling systems. Instruments and sampling systems installed and used pursuant to §

34:10:12:14 shall be capable of monitoring emission levels within twenty per cent with a confidence level of ninety-five per cent and shalo be calibrated in accordance with methods prescribed by the manufacturers recommended zero adjustment and calibration procedures at least once per twenty four hour operating period unless the manufacturer specifies or recommends calibration at shorter intervals, in which case such specifications or recommendations shall be followed. The applicable method specified in Appendix A, 40 CFR 60 shall be the reference method.

General Authority: SDCL 34-16A-12. Law Implemented: SDCL 34-16A-19.

34:10:12:19. Sulfur content of solid fuels sampling methods for fossil fuel fired generators. The sulfur content of solid fuels, as burned, shall be determined in accordance with the following methods of ASTM:

(1) Mechanical sampling shall be done by Method D 2234-72;

(2) Sample preparation shall be done by Method D 2013-72; and

(3) Sample analysis shall be done by Method D 3176-74, 3180-74.

General Authority: SDCL 34-16A-12. Law Implemented: SDCL 34-16A-19.

Note: Methods or specifications referenced to in this section are available by writing, America Society for Testing and Materials, 1916 Race Street, Philadelphia, Pennyslvania 19103, publication date indicated by last two digits, at cost of $1.75 each.

34:10:12:20. Sulfur content of liquid feuls for fossil fuel fired generators. The sulfur content of liquid fuels, as burned, shall be determined in accordance with ASTM Methods D-1551-68, D 129-64 (reapproved 1968) or D 1552-64 (reapproved 1965).

General Authority: SDCL 34-16A-12. Law Implemented: SDCL 34-16A-19.

Note: Methods or specifications referenced to in this article are available by writing, America Society for Testing and Materials, 1916 Race Street, Philadelphia, Pennsylvania, as published, October 28, 1971, at a cost of $1.75 each.

34:10:12:21. Measurement of fuel burning rate daily - Heating value and ash content weekly - Electrical output daily - Recording. The rate of fuel burned for each fuel shall be measured daily or at shorter intervals and recorded. The heating value and ash content of fuels shall be ascertained at least once per week and recorded. Where the steam generating unit is used to generate electricity, the average electrical output and the minimum and maximum hourly generation rate shall be measured and recorded daily.

General Authority: SDCL 34-16A-12. Law Implemented: SDCL 34-16A-19.

34:10:12:22. Periods of excess emissions defined. For the purpose of reports required pursuant to § 34:10:12:03 (3) for fossil fuel fired steam generator units, periods of excess emissions that shall be reported are defined as follows:

(1) Opacity, all hourly periods during which there are three or more one-minute periods when the average opacity exceeds twenty percent;

(2) Sulfur dioxide, any two consecutive hourly periods during which average sulfur dioxide emissions exceed 0.8 pound per million British Thermal Units heat input for liquid fossil fuel burning equipment; or for sources which elect to conduct representatives analyses of fuels in accordance with § 34:10:12:19, or § 34:10:12:20 in lieu of installing and operating a monitoring device pursuant to § 34:10:12:17 (1), any calendar day during which fuel analysis shows that the limits of § 34:10:12:14 are exceeded.

General Authority: SDCL 34-16A-12. Law Implemented: SDCL 34-16A-19.

34:10:12:23. Test methods and procedures for fossil fuel fired generators. The performance tests for determining emission of particulate matter, sulfur dioxide, and nitrogen oxides from fossil fuel fired steam generating units and procedures under which such performance testing shall be conducted shall be those prescribed by 40 CFR 60.46.

General Authority: SDCL 34-16A-12. Law Implemented: SDCL 34-16A-19.

34:10:12:28. Applicability and designation of portland cement plants. The following types of portland cement plants must comply with § § 34:10:12:29 to 34:10:12:34, inclusive: Kiln, clinker cooler, raw mill system, finish mill system, raw mill dryer, raw material storage, clinker storage, finished product storage, conveyor transfer points, bagging and bulk loading and unloading systems.

General Authority: SDCL 34-16A-12. Law Implemented: SDCL 34-16A-19.

34:10:12:29. Particulate matter standards - Kilns. On and after the date on which the performance test required to be conducted by § § 34:10:12:04 to 34:10:12:09, inclusive, is completed, no owner or operator subject to § 34:10:12:28 shall cause to be discharged into the atmosphere from any kiln any gases which:

(1) Contain particulate matter in excess of 0.15 kilograms per metric ton of feed, dry basis, to the kiln (0.3 pounds per ton); and

(2) Exhibit greater than ten percent opacity.

General Authority: SDCL 34-16A-12. Law Implemented: SDCL 34-16A-24.

34:10:12:30. Particulate matter standards - Clinker cooler. On and after the date on which the performance test required to be conducted by § § 34:10:12:04 to 34:10:12:09, inclusive, is completed, no owner or operator subject to § 34:10:12:30 shall cause to be discharged into the atmosphere from any clinker cooler any gases which:

(1) Contain particulate matter in excess of 0.05 kilograms per metric ton of feed, dry basis, to the kiln (0.1 pounds per ton); and

(2) Exhibit ten per cent opacity, or greater.

General Authority: SDCL 34-16A-12. Law Implemented: SDCL 34-16A-24.

34:10:12:31. Opacity standards for kilns and clinker cooler. On and after the date on which the performance test required to be conducted by § § 34:10:12:04 to 34:10:12:09, inclusive, is completed, no owner or operator subject to § 34:10:12:30 shall cause to be discharged into the atmosphere from any affected facility other than the kiln and clinker cooler any gases which exhibit ten per cent opacity, or greater.

General Authority: SDCL 34-16A-12. Law Implemented: SDCL 34-16A-24.

34:10:12:32. Exemption for uncombined water. Where the presence of uncombined water is the only reason for failure to meet the requirements of § § 34:10:12:29(2), 34:10:12:30(2), and 34:10:12:31, such failure will not be a violation of the applicable opacity standard.

General Authority: SDCL 34-16A-12. Law Implemented: SDCL 34-16A-24.

34:10:12:33. Monitoring of operations for portland cement plants. The owner or operator of any portland cement plant subject to the provisions of § 34:10:12:28 shall record the daily production rates and kion feed rates.

General Authority: SDCL 34-16A-12. Law Implemented: SDCL 34-16A-19.

34:10:12:34. Test methods and procedures. The performance tests for determining emissions of particulate matter from portland cement plant kilns and clinker coolers and the procedures under which such performance testing shall be conducted shall be those stated in 40 CFR 60.64.

General Authority: SDCL 34-16A-12. Law Implemented: SDCL 34-16A-19.

34:10:12:35. Applicability and designation of nitric acid plants. Sections 34:10:12:36 to 34:10:12:40 inclusive are applicable to each nitric acid production unit.

General Authority: SDCL 34-16A-12. Law Implemented: SDCL 34-16A-24.

34:10:12:36. Standard for nitric acid plants. On and after the date on which the performance test required to be conducted by § § 34:10:12:04 to 34:10:12:09 inclusive, is completed, no owner or operator subject to § 34:10:12:35 shall cause to be discharged into the atmosphere from any affected facility any gases which exhibit ten per cent opacity, or greater Where the presence of uncombined water is the only reason for failure to meet the requirements of this subsection, such failure will not be a violation of this section.

General Authority: SDCL 34-16A-12. Law Implemented: SDCL 34-16A-24.

34:10:12:37. Daily record of production rate and hours. Production rate and hours of operation shall be recorded daily.

General Authority: SDCL 34-16A-12. Law Implemented: SDCL 34-16A-19.

34:10:12:38. Applicability and designation of sulfuric acid plants. Sections 34:10:12:39 to 34:10:12:44 inclusive are applicable to each sulfuric acid production unit.

General Authority: SDCL 34-16A-12. Law Implemented: SDCL 34-16A-24.

34:10:12:39. Standard for sulfur dioxide for sulfuric acid plants. On and after the date on which the performance test required to be conducted by § § 34:10:12:04 to 34:10:12:09 inclusive is completed, no subject to § 34:10:12:38 shall cause to be discharged into the atmosphere from any affected facility any gases which contain sulfur dioxide in excess of two kilograms per metric ton of acid produced (four pounds per ton), the production being expressed as one hundred per cent sulfuric acid.

General Authority: SDCL 34-16A-12. Law Implemented: SDCL 34-16A-22.

34:10:12:40. Standard for acid mist for sulfuric acid plants. On and after the date on which the performance test required to be conducted by § § 34:10:12:04 to 34:10:12:09 inclusive is completed, no owner or operator subject to § 34:10:12:38 shall cause to be discharged into the atmosphere from any affected facility any gases which:

(1) Contain acid mist, expressed as sulfuric acid in excess of 0.075 kilograms per metric ton of acid produced (0.15 pounds per ton), the production being expressed as one hundred per cent sulfuric acid, and

(2) Exhibit ten per cent opacity, or greater. Where the presence of uncombined water is the only reason for failure to meet the requirements of this subsection, such failure will not be a violation of this section.

34:10:12:41. Emission monitoring for sulfuric acid plants. There shall be installed, calibrated, maintained, and operated, in any sulfuric acid production unit subject to the provisions of § 34:10:12:38, an instrument for continuously monitoring and recording emissions of surfur dioxide.

General Authority: SDCL 34-16A-12. Law Implemented: SDCL 34-16A-19.

34:10:12:42. Daily record of production rate and hours. Production rate and hours of operation shall be recorded daily.

General Authority: SDCL 34-16A-12. Law Implemented: SDCL 34-16A-19.

34:10:12:43. Excessive emissions defined. For the purpose of owner or operator making written reports pursuant to § 34:10:12:03 (3) for sulfuric acid production units, periods of excess emissions that shall be reported are defined as any two consecutive hourly periods during which average sulfur dioxide emissions exceed four pounds per ton of acid produced.

General Authority: SDCL 34-16A-12. Law Implemented: SDCL 34-16A-19.

34:10:12:44. Test methods and procedures for sulfuric acid plants. The performance test for determining emissions of acid mist and sulfuric dioxide from sulfuric acid production units and procedures under which such performance testing shall be conducted shall be those stated in 40 CFR 60.85.

General Authority: SDCL 34-16A-12. Law Implemented: SDCL 34-16A-19.

34:10:12:45. Applicability and designation of asphalt concrete plants. Sections 34:10:12:46 and 34:10:12:47 apply to each asphalt concrete plant. An asphalt concrete plant is comprised of any combination of the following: Dryers; systems for screening, handling, storing, and weighing hot aggregate; systems for loading, transferring, and storing mineral filler; systems for mixing asphalt concrete; and the loading, transfer, and storage systems associated with emission control systems.

General Authority: SDCL 34-16A-12. Law Implemented: SDCL 34-16A-24.

34:10:12:46. Standard for particulate matter for asphalt concrete plants. On and after the date on which the performance test required to be conducted by § § 34:10:12:04 to 34:10:12:09 inclusive is completed, no owner or operator subject to § 34:10:12:45 shall discharge or cause the discharge into the atmosphere from any affected facility any gases which:

(1) Contain particulate matter in excess of ninety milligrams per dry standard cubic meter (0.04 grains per dry standard cubic foot); and

(2) Exhibit twenty percent opacity, or greater. Where the presence of uncombined water is the only reason for failure to meet the requirements of this paragraph, such failure shall not be a violation of this section.

General Authority: SDCL 34-16A-12. Law Implemented: SDCL 34-16A-24.

34:10:12:47. Test methods and procedures for asphalt concrete plants. The performance tests for determining emissions from asphalt concrete plants and procedures under which performance testing shall be conducted shall be those stated in 40 CFR 60.93 and Appendix A, thereof.

General Authority: SDCL 34-16A-12. Law Implemented: SDCL 34-16A-19.

34:10:12:48. Applicability and designation of petroleum refineries. Sections 34:10:12:49 to 34:10:12:60, inclusive are applicable to the following petroleum refineries: Fluid catalytic cracking unit catalyst regenerators, fluid catalytic cracking unit incinerator waste heat boilers, and fuel gas combustion devices.

General Authority: SDCL 34-16A-12. Law Implemented: SDCL 34-16A-24.

34:10:12:49. Standard for particulate matter for petroleum refineries. On and after the date on which the performance test required to be conducted by § § 34:10:12:04 to 34:10:12:09, inclusive is completed, no owner or operator subject to § 34:10:12:48 shall discharge of cause the discharge into the atmosphere from any fluid catalytic cracking unit catalyst regenerator or from any fluid catalytic cracking unit incinerator waste heat boiler:

(1) Particulate matter in excess of 1.0 kilograms per one thousand kilograms (1.0 pounds per 1000 pounds) of coke burnoff in the catalyst regenerator; and

(2) Gases exhibiting thirty percent opacity or greater, except for three minutes in any one hour. Where the presence of uncombined water is the only reason for failure to meet the requirements of this subsection, such failure shall not be a violation of this section.

General Authority: SDCL 34-16A-12. Law Implemented: SDCL 34-16A-24.

34:10:12:52. Standard for sulfur dioxide for petroleum refineries. On and after the date on which the performance test required to be conducted by § § 34:10:12:04 to 34:10:12:09 inclusive is completed, no owner or operator subject to § 34:10:12:48 shall burn in any fuel gas combustion device any fuel gas which contains hydrogen sulfide in excess of 230 milligram per dry standard cubic meter (0.10 grains per dry standard cubic foot) except as provided in § 34:10:12:53. The combusion of process upset gas in a flare or the combustion in a flare of process gas or fuel gas which is released to the flare as a result of relief valve leakage, is exempt from § 34:10:12:52.

General Authority: SDCL 34-16A-12. Law Implemented: SDCL 34-16A-24.

34:10:12:53. Alternative treatment of gases. The owner or operator may elect to treat the gases resulting from the combustion of fuel gas in a manner which limits the release of sulfur dioxide to the atmosphere if it is shown to the satisfaction of the department that this prevents sulfur dioxide emissions as effectively as compliance with the requirements of § 34:10:12:52.

General Authority: SDCL 34-16A-12. Law Implemented: SDCL 34-16A-24.

34:10:12:54. Emission monitoring for petroleum refineries. The owner or operator of any petroleum refinery subject to the provisions of § 34:10:12:48 shall install, calibrate, maintain, and operate monitoring instruments as follows:

(1) A photoelectric or other type of smoke detector and recorder to continuously monitor and record the opacity of gases discharged into the atmosphere from the fluid catalytic cracking unit catalyst regenerator;

(2) An instrument for continuously monitoring and recording the concentration of carbon monoxide in gases discharged into the atmosphere from fluid catalytic cracking unit catalyst regenerators, except where the requirements of § 34:10:12:54(3) are met:

(4) An instrument for continuously monitoring and recording concentrations of hydrogen sulfide in fuel gases burned in any fuel gas combustion device, except where the requirements of § 34:10:12:53 are met. Fuel gas combustion devices having a common source of fuel gas may be monitored at one location if sampling at this location produces results representative of the hydrogen sulfide concentration in the fuel gas burned;

(5) An instrument for continuously monitoring and recording concentrations of sulfur dioxide in the gases discharged into the atmosphere from the combustion of fuel gases except where the requirements of § 34:10:12:52 are met.

General Authority: SDCL 34-16A-12. Law Implemented: SDCL 34-16A-19.

34:10:12:55. Instruments and sampling systems to meet department specifications. Instruments and sampling systems installed and used pursuant to § 34:10:12:53 shall be calibrated in accordance with the method prescribed by the manufacturer of such instrument. The instruments shall be subjected to the manufacturer's recommended zero adjustment and calibration procedures at least once per twenty four hour operating period unless the manufacturer specifies or recommends calibration at shorter intervals, in which case such specifications or recommendations shall be followed.

General Authority: SDCL 34-16A-12. Law Implemented: SDCL 34-16A-19.

34:10:12:56. Daily record of average coke burn-off rate and hours of operation of petroleum refineries. The average coke burnoff rate (thousands of kilogram per hour) and hours of operation for any fluid catalytic cracking unit catalyst regenerator subject to § § 34:10:12:49, 34:10:12:50, and 34:10:12:51 shall be recorded daily.

General Authority: SDCL 34-16A-12. Law Implemented: SDCL 34-16A-19.

34:10:12:57. Daily record of rate of combustion for fossil fuels and hours of operation at times fossil fuels are combusted. For any fluid catalytic cracking unit catalyst regenerator which is subject to § § 34:10:12:49 and 34:10:12:50 and which utilizes an incinerator-waste heat boiler to combust the exhaust gases from the catalyst regenerator, the owner or operator shall record daily the rate of combustion of liquid or solid fossil fuels in liters per hour or kilograms per hour, and the hours of operation during which liquid or solid fossil fuels are combusted in the incinerator waste heat boiler.

General Authority: SDCL 34-16A-12. Law Implemented: SDCL 34-16A-19.

34:10:12:58. Excessive emissions defined. For the purpose of reports pursuant to § 34:10:12:03 (3) for petroleum refineries, periods of excess emissions that shall be reported are defined as follows:

(1) "Opacity," all hourly periods in which there are four or more one minute periods during which the average opacity of the gases discharged into the atmosphere from any fluid catalytic cracking unit catalyst regenerator subject to § § 34:10:12:49 and 34:10:12:50 exceeds thirty per cent;

(2) "Carbon monoxide," all hourly periods during which the average carbon monoxide concentration in the gases discharged into the atmosphere from any fluid catalytic cracking unit catalyst regenerator subject to § 34:10:12:51 exceeds 0.05 per cent by volume or any hourly period in which oxygen concentration and firebox temperature measurements indicate that the average concentration of carbon monoxide in the gases discharged into the atmosphere exceeds 0.05 per cent by volume for sources which combust the exhaust gases from any fluid catalytic cracking unit catalyst regenerator subject to § 34:10:12:51 in an incinerator waste heat boiler and for which the owner or operator elected to monitor in accordance with § 34:10:12:51.

(3) "Hydrogen sulfide," all hourly periods during which the average hydrogen sulfide content of any fuel gas combusted in any fuel gas combustion device subject to § § 34:10:12:52 and 34:10:12:53 exceeds 230 milligrams per dry standard cubic meter (0.10 grains per dry standard cubic foot) except where the requirements of § 34:10:12:53; and

(4) "Surfur dioxide," all hourly periods during which the average sulfur dioxide emissions discharged into the atmosphere from any fuel gas combustions device subject to § § 34:10:12:52 and 34:10:12:53 exceed the level specified in § 34:10:12:53, except where the requirements of § 34:10:12:52 are met.

General Authority: SDCL 34-16A-12. Law Implemented: SDCL 34-16A-19.

34:10:12:59. Test methods and procedures for petroleum refineries. The performance tests for determining emissions from petroleum refineries and procedures under which performance testing shall be conducted shall be those stated in 40 CFR 60.106 and Appendix A thereof.

General Authority: SDCL 34-16A-12. Law Implemented: SDCL 34-16A-19.

34:10:12:60. Applicability and designation of storage vessels for petroleum liquids. Sections 34:10:12:61 through 34:10:12:65 apply to each storage vessel for petroleum liquids which has a storage capacity greater than 151,412 liters (40,000 gallons); except § § 34:10:12:61 to 34:10:12:65 inclusive do not apply to storage vessels for petroleum or condensate stored, processed, treated or all three at a drilling and production facility prior to custody transfer.

General Authority: SDCL 34-16A-12. Law Implemented: SDCL 34-16A-24.

34:10:12:66. Applicability and designation of secondary lead smelters. Sections 34:10:12:67 through 34:10:12:70 inclusive are applicable to the following secondary lead smelters: Pot furnaces of more than 250 kilograms (550 pounds) charging capacity, blast (cupola) furnaces, and reverberatory furnaces.

General Authority: SDCL 34-16A-12. Law Implemented: SDCL 34-16A-24.

34:10:12:67. Standard for particulate matter for blast and reverberatory furnace. On and after the date on which the performance test required to be conducted by § 34:10:12:06 (3) is completed, no owner or operator subject to § 34:10:12:66 shall discharge or cause the discharge into the atmosphere from a blast (cupola) or reverberatory furnace any gases which:

(1) Contain particulate matter in excess of fifty milligrams per dry standard cubic meter (0.022 grains per dry standard cubic foot); and

(2) Exhibit twenty per cent opacity or greater.

General Authority: SDCL 34-16A-12. Law Implemented: SDCL 34-16A-24.

34:10:12:68. Opacity standards for pot furnace. On and after the date on which the performance test required to be conducted by § § 34:10:12:04 through 34:10:12:09 inclusive is completed, no owner or operator subject to § 34:10:12:06 shall discharge or cause the discharge into the atmosphere from any pot furnace any gases which exhibit ten per cent opacity or greater.

General Authority: SDCL 34-16A-12. Law Implemented: SDCL 34-16A-24.

34:10:12:70. Test methods and procedures for secondary lead smelters. The performance tests for determining emissions from secondary lead smelters and procedures under which secondary lead smelters and procedures under which performance testing shall be conducted shall be those stated in 40 CFR 60.123 and Appendix A, thereof.

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General Authority: SDCL 34-16A-12. Law Implemented: SDCL 34-16A-24.

34:10:12:71. Applicability and designation of secondary brass and bronze ingot production plants. Sections 34:10:12:77 through 34:10:12:80 are applicable to the following secondary brass or bronze ingot production plants; reverberatory and electric furnaces of one thousand kilograms (2,205 pounds) or greater production capacity and blast or cupola furnaces of 250 kilograms per hour (550 pounds per hour) or greater production capacity.

General Authority: SDCL 34-16A-12. Law Implemented: SDCL 34-16A-24.

34:10:12:72. Standard for particulate matter for reverberatory furnace. On and after the date on which the performance test required to be conducted by § § 34:10:12:04 through 34:10:12:09, inclusive is completed, no owner or operator subject to § 34:10:12:71 shall discharge or cause the discharge into the atmosphere from a reverberatory furnace any gases which:

(1) Contain particulate matter in excess of fifty milligrams per dry standard cubic meter (0.022 grains per dry standard cubic foot); or

(2) Exhibit twenty percent opacity or greater.

General Authority: SDCL 34-16A-12. Law Implemented: SDCL 34-16A-24.

34:10:12:73. Opacity standards for blast and electric furnaces. On and after the date on which the performance test required to be conducted by § § 34:10:12:04 to 34:10:12:09 inclusive is completed, no owner or operator subject to § 34:10:12:71 shall discharge or cause the discharge into the atmosphere from any blast (cupola) or electric furnace any gases which exhibit ten percent opacity or greater.

General Authority: SDCL 34-16A-12. Law Implemented: SDCL 34-16A-24.

34:10:12:75. Test methods and procedures for secondary brass and bronze ingot production plants. The performance tests for determining emissions from secondary brass and bronze ingot production plants and procedures under which performance testing shall be conducted shall be those stated in 40 CFR 60.133 and Appendix A, thereof.

General Authority: SDCL 34-16A-12. Law Implemented: SDCL 34-16A-19.

34:10:12:79. Applicability and designation of sewage treatment plants. Sections 34:10:12:80 through 34:10:12:82 apply to each incinerator which burns the sludge produced by municipal sewage treatment facilities.

General Authority: SDCL 34-16A-12. Law Implemented: SDCL 34-16A-24.

34:10:12:80. Standard for particulate matter for sewage treatment plants. On and after the date on which the performance test required to be conducted by § § 34:10:12:04 to 34:10:12:09 inclusive is completed, no owner or operator of any sewage sludge incinerator subject to § 34:10:12:79 shall discharge or cause the discharge into the atmosphere of:

(1) Particulate matter at a rate in excess of 0.65 grams per kilogram dry sludge input (1.30 pounds per ton dry sludge input);

(2) Any gases which exhibit twenty percent opacity or greater. Where the presence of uncombined water is the only reason for failure to meet the requirements of this paragraph, such failure shall not be a violation of this subsection.

Gene.al Authority: SDCL 34-16A-12. Law Implemented: SDCL 34-16A-24.

34:10:12:82. Test methods and procedures for sewage treatment plants. The performance tests for determining emissions from sewage treatment plants and procedures under which performance testing shall be conducted shall be those stated in 40 CFR 60.154 and Appendix A, thereof.

General Authority: SDCL 34-16A-12. Law Implemented: SDCL 34-16A-19.

RULES
OF
TENNESSEE DEPARTMENT OF PUBLIC HEALTH
BUREAU OF ENVIRONMENTAL HEALTH SERVICES
DIVISION OF AIR POLLUTION CONTROL

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1200-3-5-.05 Standard for Certain Existing Sources

1200-3-5-.01 GENERAL STANDARD

No person shall cause, suffer, allow or permit discharge of a visible emission from any air contaminant source with a density greater than number one (1) of the Ringelmann Chart or an opacity in excess of twenty (20) percent for an aggregate of more than five (5) minutes in any one (1) hour or more than twenty (20) minutes in any twenty-four (24) hour period.

Authority: T.C.A. Section 533412. Administrative History. Original Rule certified June 7, 1974. Amended April 21, 1976. Amended effective February 9, 1977.

1200-3-5-.02 EXCEPTIONS

(1) Due allowance shall be made for visible emissions in excess of that permitted in rules .01 and .05 of this Chapter which are necessary or unavoidable due to start-up, shutdown, breakdown, or upset conditions provided the owner or operator shall maintain a running, current log of such start-up, shutdown, breakdown, or upset condition showing the time at which such condition began and ended and that such record shall be available to the Technical Secretary or his representative upon his request.

(2) In the event of a dispute between the owner or operator of an air contaminant source and the Tennessee Air Pollution Control Division as to what consitiutes due allowance, the Technical Secretary may conduct an Administrative Hearing for the determination of this matter.

Authority: T.C.A. Section 53-3412. Administrative History. Original Rule certified June 7, 1974. Amended April 21, 1976. Amended effective February 9, 1977.

1200-3-5-.03 METHOD OF RECORDING

(1) In testing compliance with the rules of this chapter visible emissions tending to produce a black plume will be evaluated in terms of the Ringelmann scale or equivalent opacity while visible emissions tending to produce a non-black plume will be evaluated in terms of equivalent opacity and expressed as percent opacity.

(2) Obscuration of vision due to uncombined water droplets shall not be considered a violation of the standards in this chapter.

Authority: T.C.A. Section 53-3412. Administrative History. Original Rule certified June 7, 1974. Amended April 21, 1976. Amended effective February 9, 1977.

1200-3-5-.04 EXEMPTION

Visible emissions from fuel-burning equipment used exclusively to provide space heating in a building containing not more than two (2) dwelling units shall not be subject to the provisions of this chapter.

Authority: T.C.A. Section 53-3412. Administrative History. Original Rule effective February 9, 1977.

1200-3-5-.05 STANDARD FOR CERTAIN EXISTING SOURCES

(1) Air contaminant sources meeting the conditions in paragraphs (2) and (3) of this rule and for which a certificate of validation has been issued by the Technical Secretary indicating that to his satisfaction the conditions in paragraph (2) are met, must in lieu of meeting the requirements of rule .01 of this chapter, meet the following emission standards of no visible emissions of greater density than number two (2) on the Ringelmann Chart or an equivalent opacity in excess of forty (40) per cent for an aggregate of more than five (5) minutes in any one (1) hour or more than twenty (20) minutes in any one twenty-four (24) hour period.

(2) The Technical Secretary must issue a certificate of validation if applied for and the owner or operator of the air contaminant source demonstrates to the satisfaction of the Technical Secretary the following conditions exist:

(a) The air contaminant source was commenced on or before April 3, 1972, and no modification has been made to the source since that date.

(b) The air contaminant source is regulated by rule 1200-3-6-.02 or a process emission source meeting the emission standard in paragraph 1200-3-7-.02(4).

(c) The air contaminant source does not include a gas or oil-fired boiler. However, if the particulate emissions of the fuel burning installation are less than that which rule 1200-3-6-.02 would allow for a fuel burning installation of the size Qs where Qs is the heat input rate for solid fuels and /or liquid fuels other than oil, then the previous sentence will not prohibit, in and of itself, the issuance of a certificate of validation.

(d) Each emission point, suitable for the installation of a continuously recording equivalent opacity monitor, of the air contaminant source, whether a process emission source, fuel burning installation, incinerator, or wigwam, having a flow rate of 100,000 ACFM or more shall be equipped with continuously recording equivalent opacity monitors of the reference method type as outlined in the Federal Register, Vol. 40, No. 194, of October 6, 1975, starting on page 46259, or of an equivalent or alternate type approved by the Technical Secretary. However, a monitor will not have to be installed on those emission points of the air contaminant source for which the owner or operator does not wish to be allowed to emit more than twenty percent opacity. In this event these points must be clearly specified on any application for a certificate of validation. The Technical Secretary may still require these other points to install such a monitoring system. This provision shall not apply to gas streams containing moisture which interferes with proper instrument operation.

(e) The air contaminant source meets all emission standards in these regulations outside this chapter. Demonstration of this will require, as a minimum, an acceptable stack test report for particulate matter. This test must be conducted in the presence of personnel from the Division of Air Pollution Control.

(f) The particulate ambient air quality standards are being met in the vicinity of the air contaminant source. The Technical Secretary may require this to be demonstrated.

(g) A certificate of validation has never been revoked for this air contaminant source.

(h) A fee of five hundred dollars ($500.00) has been paid to the Department to cover the costs of review of the request for the certificate of validation.

(3) The owner or operator of the air contaminant source must:

(a) post on the operating premises the certificate of validation;

(b) maintain for at least one year the readout from the opacity monitor(s) and keep this record available for inspection by the personnel of the Division of Air Pollution Control;

(c) keep the air pollution control equipment and the recording equivalent opacity monitor in good operating condition and utilize said equipment at all times.

(4) After Administrative Hearing the certificate of validation will be revoked by the Technical Secretary if he finds any of the requirements of paragraph (2) have been violated and/or if the requirements of paragraph (3) have been frequently and flagrantly violated after its issuance.

(5) Upon the granting of a construction permit for the modification of an air contaminant source for which a certificate of validation has been issued, the certificate of validation shall become void.

Authority: T.C.A. Section 53-3412. Administrative History. Original Rule effective February 9, 1977.

1200-3-6-.03 GENERAL NON-PROCESS GASEOUS EMISSIONS.

(1) No person shall cause, suffer, allow or permit gaseous emissions in excess of the standards in this Chapter.

(2) Any person constructing or otherwise establishing an air contaminant source emitting gaseous air contaminants after April 3, 1972, shall install and utilize the best equipment and technology currently available for controlling such gaseous emission.

Authority: T.C.A. Section 53-3412. Administrative History. Original Rule certified June 7, 1974.

1200-3-6-.04 NITROGEN OXIDES.

(1) EMISSION STANDARDS.

(a) New Air Contaminant sources.

Air contaminant sources with a total heat input of 250 million BTU's per hour or greater, constructed after April 3, 1972, shall not cause, suffer, allow or permit the emission of nitrogen oxides (measured as NO_2) in excess of the following:

1. 165 ppm corrected to 15% excess air when gaseous fossil is fired (equivalent to 0.20 pound of nitrogen oxides (measured as NO_2) per million BTU heat input, maximum 2 hour average).

2. 227 ppm corrected to 15% excess air when liquid fossil fuel is fired (equivalent to 0.30 pound of nitrogen oxides (measured as NO_2) per million BTU heat input, maximum 2 hour average)

3. 525 ppm corrected to 15% excess air when solid fossil fuel is fired (equivalent to 0.70 pound of nitrogen oxides (measured as NO_2) per million BTU heat input, maximum 2 hour average)

4. When different fossil fuels are burned simultaneously in any combination, the applicable standard shall be determined by proration. Compliance shall be determined when using the following formula:

$$\frac{X\,(0.20) + Y\,(0.30 + Z\,(0.70)}{X+Y+Z}$$

Where:

X is the percent of total heat input derived from gaseous fossil fuel, and

Y is the percent of total heat input derived from liquid fossil fuel, and

Z is the percent of total heat input derived from solid fossil fuel.

Authority: T.C.A. Section 53-3412. Administrative History. Original Rule certified June 7, 1974.

1200-3-7-.08 SPECIFIC PROCESS EMISSION STANDARDS.

(1) EXISTING FERROUS JOBBING CUPOLAS

No later than August 9, 1973, the maximum particulate emission rate from existing ferrous jobbing cupolas shall be as given in Table 3.

TABLE 3

ALLOWABLE RATE OF PARTICULATE EMISSION BASED

ON PROCESS WEIGHT RATE

EXISTING FERROUS JOBBING CUPOLAS

Process Weight (lb/hr)	Maximum Weight Discharge (lb/hr)
1,000	3.05
2,000	4.70
3,000	6.35
4,000	8.00
5,000	9.58
6,000	11.30
7,000	12.90
8,000	14.30
9,000	15.50
10,000	16.65
12,000	18.70
16,000	21.60
18,000	23.40
20,000	25.10

The emission rate for a process weight intermediate to those shown in the Table shall be determined by linear interpolation.

(2) EMISSIONS FROM NITRIC ACID PLANTS

(a) Existing Nitric Acid Plants

After July 1, 1975, no person shall caus, suffer, allow or permit the emission into the air of nitrogen oxides fom any nitric acid plant under construction or in operation prior to April3, 1972, which are:

1. in excess of 5.5 lbs. per ton of aci produced, maximum 2 hour average, expressed as NO_2; or

2. 400 ppm (0.04% by volume dry basis of nitrogen oxides, measured as NO_2, whichever is the more restrictie.

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(b) NEW NITRIC ACID PLANTS

After January 1, 1973, no person shall cause, suffer, allow or permit the emission into the open air of nitrogen oxides from any new nitric acid plants constructed after April 3, 1972, which are:

1. in excess of 3 lbs. per ton of acid produced, maximum 2 hr. average, expressed as NO_2; or

2. 209 ppm (0.0209% by volume dry basis) of nitrogen oxides, measured as NO_2, whichever is the more restrictive.

(3) COTTON GINS

(a) No person shall cause or permit the emission of particulate matter in any one hour in excess of the following amount shown in Table 4 for the process weight per hour allocated to such operation.

(b) For the purposes of this part, the total process weight from all similar process units at a plant or premises shall be used for determining the maximum allowable emission of particulate matter that passes through a stack or stacks.

(c) The owner or operator of a cotton gin which was in operation or under construction prior to January 1, 1973, shall meet the standards of this paragraph as well as the standards in Rule 1200-3-4, 1200-3-5, and 1200-3-6 by July 1, 1975. The owner or operator of a cotton gin on which construction begins after January 1, 1973, shall meet the standards of this paragraph at the time the operation of such gin commences.

TABLE 4
ALLOWABLE PARTICULATE MATTER EMISSION BASED
ON PROCESS WEIGHT RATE FOR COTTON GINS

Process Weight Rate (lb/hr)	Allowable Emission Rate (lb/hr)	Process Weight Rate (lb/hr	Allowable Emission Rate (lb/hr)
1,000	1.6	9,000	13.7
1,500	2.4	10,000	15.2
2,000	3.1	12,000	18.2
2,500	3.9	14,000	21.2
3,000	4.7	16,000	24.2
3,500	5.4	18,000	27.2
4,000	6.2	20,000	30.1
5,000	7.7	30,000	44.9
6,000	9.2	40,000	59.7
7,000	10.7	50,000	64.0
8,000	12.2	60,000 or more	67.4

The emission rate for a cotton gin intermediate between those shown in Table 4 shall be determined by linear interpolation.

(4) NEW PORTLAND CEMENT PLANTS

No person shall cause, suffer, allow or permit the emission into the open air of particulates from any portland cement plant constructed after January 1, 1973, which are:

(a) From the kiln in excess of 0.30 lb. per ton of feed to the kiln, maximum 2 hour average;

(b) From the clinker cooler in excess of 0.10 lb. per ton of feed to the kiln, maximum 2 hour average.

(5) NEW AND EXISTING KRAFT MILLS.

The owner or operator of a kraft mill on which construction begins after January 1, 1973, shall meet the standards listed in subparagraphs (a), (b), and (c) of this paragraph at the time the operation of such mill commences. After August 9, 1973, no person shall cause, suffer, allow or permit particulate emissions from a kraft mill under construction or operation prior to the effective date of these regulations in excess of the standard chosen in Rules 1200-3-7-.02(1) or 1200-3-7-.02 (2) provided, however, that after July 1, 1977, said emissions are as follows:

(a) Particulate matter from all recovery stacks shall not exceed three pounds per ton of equivalent air-dried kraft pulp.

(b) Particulate matter from all lime kilns shall not exceed one pound per ton of equivalent air dried kraft pulp.

(c) Particulate matter from all smelt tanks shall not exceed one-half pound per ton of equivalent air dried kraft pulp.

(6) EXISTING ASPHALT PLANTS.

After August 9, 1973, no person shall cause, suffer, allow or permit the discharge of particulate emissions from any asphalt plant under construction or in operation prior to April 3, 1972, in excess of the standard selected in accordance with the provisions of Rule 1200-3-7-.02(1) or 1200-3-7-.02(2). It is expressly provided that no later than July 1, 1975, these emissions shall not be in excess of the standards set forth in Table 1 of Chapter 1200-3-7, entitled "Existing Process Emission Sources: Allowable Rate of Emission Based on Process Weight Rate". It is further stipulated that after that date, the rate of emission for existing asphalt plants with a process weight rate in excess of 200,000 pounds (100 tons) per hour shall not exceed 51.2 pounds per hour.

Authority: TCA Section 53-3412. Administrative History. Original Rule certified June 7, 1974. Rule Amended: filed May 17, 1974, effective June 16, 1974.

1200-3-7-.09 SULFURIC ACID MIST

(1) Sulfuric acid plants of any type commenced on or before April 3, 1972, must not emit more than 0.500 pounds of sulfuric acid mist per ton of 100% of H_2SO_4 produced, maximum one hour average expressed as H_2SO_4.

(2) Sulfuric acid plants of any type commenced after April 3, 1972, must not emit more than 0.150 pounds of sulfuric acid mist per ton of 100% H_2SO_4 produced, maximum one hour average expressed as H_2SO_4.

Authority: T.C.A. Section 53-3412. Administrative History. Original Rule effective February 9, 1977.

RULES
OF
TENNESSEE DEPARTMENT OF PUBLIC HEALTH
BUREAU OF ENVIRONMENTAL HEALTH SERVICES
DIVISION OF AIR POLLUTION CONTROL

CHAPTER 1200-3-10
REQUIRED SAMPLING, RECORDING AND REPORTING

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1200-3-10-.01 Sampling Required to Establish Air Contaminant Emission Levels
1200-3-10-.02 Monitoring of Source Emissions, Recording and Reporting of the Same are Required
1200-3-10-.03 Malfunction of Equipment, Reports Required

1200-3-10-.01 SAMPLING REQUIRED TO ESTABLISH AIR CONTAMINANT EMISSION LEVELS.

(1) NEW FACILITIES

(a) There shall be provided for any stack or duct adequate sampling facilities as follows:

1. Sampling ports of a size, number and location as the Technical Secretary may require;

2. Safe access to each port; and

3. Such other sampling and testing facilities as the Technical Secretary may require.

(b) The Technical Secretary may at his discretion require the applicant for an operating permit to conduct or have conducted such tests as are necessary to establish the amount of air contaminants emitted from such equipment or control apparatus. Such tests shall be conducted in a manner approved by the Technical Secretary. The Technical Secretary may require that such tests be conducted in the presence of his representative.

(c) The Technical Secretary may conduct tests of air contaminant emissions from any source. Upon request of the Technical Secretary the person responsible for the source to be tested shall provide, at no expense to the Technical Secretary, reasonable and necessary openings in stacks, vents and ducts, along with safe and easy access thereto including a suitable power source to the point of testing for proper determination of the level of air contaminant emissions.

(2) EXISTING FACILITIES.

(a) Whenever the Technical Secretary has reason to believe that the emission limits of the regulations set forth herein are being violated, he may require the owner to conduct or have conducted at the owner's expense, tests to determine the emission level of specific air contaminants. The Technical Secretary may require that such tests be conducted in the presence of his representative.

(b) The Technical Secretary may at his discretion require the applicant for an operating permit to conduct or have conducted such tests as are necessary to establish the amount of air contaminants emitted from such equipment or control apparatus. Such tests shall be made at the expense of the applicant and shall be conducted in a manner approved by the Technical Secretary. The Technical Secretary may require that such tests be conducted in the presence of his representatives.

(c) The Technical Secretary may conduct tests of air contaminant emissions from any source. Upon request of the Technical Secretary the person responsible for the source to be tested shall provide, at no expense to the Technical Secretary, reasonable and necessary openings in stacks, vents, and ducts along with safe and easy access thereto including a suitable power source to the point of testing for proper determination of the level of air contaminant emissions.

(3) PERIODIC TESTING REQUIRED.

(a) The Technical Secretary may require the owner or operator of an air contaminant source, as a condition of his operating permit, to conduct or have conducted periodic tests to establish the amount of air contaminants emitted. The nature, extent and frequency of such required testing shall be specified in the operating permit. Such tests shall be made at the expense of the owner or operator and shall be conducted in a manner approved by the Technical Secretary. The Technical Secretary shall be supplied with such data as stipulated in the operating permit.

(b) Any person affected by any of these regulations and directed to do so by the Technical Secretary, shall file emission data, as a minimum of one year, with the Technical Secretary on forms available from the Secretary.

Authority: T.C.A. Section 53-3412. Administrative History. Original Rule certified June 7, 1974.

1200-3-10-.02 — MONITORING OF SOURCE EMISSIONS, RECORDING AND REPORTING OF THE SAME ARE REQUIRED

(1) MONITORING OF EMISSIONS

(a) The Technical Secretary may require the owner or operator of any air contaminant source discharging air contaminants, at the expense of the owner or operator, to install, calibrate, operate and maintain such monitoring equipment as the Technical Secretary shall prescribe; sample such emissions in accordance with methods as the Technical Secretary shall prescribe; establish and maintain such records; and make periodic emission reports as required in paragraph (2).

(b) 1. The specific source categories listed below are required to complete the installation and performance testing of the respective equipment and begin maintaining and recording within 18 months of the effective date of each subpart.

(i) Fossil fuel-fired steam generators, as defined in Rule 1200-3-16.02, except as provided in the following items, with an annual average capacity factor of greater than 30 percent, as reported to the Federal Power Commission for calendar year 1974, or as otherwise demonstrated to the Technical Secretary by the owner or operator, shall conform with the following monitoring requirements:

(I) A continuous monitoring system for the measurement of opacity shall be installed, calibrated, maintained and operated by the owner or operator of any such steam generator of greater than 250 million BTU per hour heat input except where:

I. gaseous fuel is the only fuel burned, or

II. oil or a mixture of gas and oil are the only fuels burned and the source is able to comply with the applicable particulate matter and opacity regulations without utilization of particulate matter collection equipment, and where the source has never been found, through any administrative or judicial proceedings, to be in violation of any visible emission standard of these regulations.

(II) A continuous monitoring system for the measurement of sulfur dioxide shall be installed, calibrated, maintained, and operated on any fossil fuel-fired steam generator of greater than 250 million BTU per hour heat input which has installed sulfur dioxide pollutant control equipment.

(III) A continuous monitoring system for the measurement of the percent oxygen or carbon dioxide shall be installed, calibrated, operated, and maintained on fossil fuel-fired steam generators where measurements of oxygen or carbon dioxide in the flue gas are required to convert sulfur dioxide continuous emission monitoring data to units of the emission standard.

(ii) Each sulfuric acid plant of greater than 300 tons per day production capacity, the production being expressed as 100 percent acid, shall install, calibrate, maintain and operate a continuous monitoring system for the measurement of sulfur dioxide for each sulfuric acid producing facility within such plant.

(iii) Each catalyst regenerator for fluid bed catalytic cracking units of greater than 20,000 barrels per/day fresh feed capacity shall install, calibrate, maintain and operate a continuous monitoring system for the measurement of opacity.

2. Any source which is subject to a regulation in Chapter 1200-3-16 or which is scheduled for retirement within five years of the effective date of the appropriate designating subparts of part 1. above, provided that adequate evidence and guarantees are provided that clearly shows that the source will cease operation prior to such date, will not be subject to the monitoring requirements of this subparagraph.

(c) All monitoring equipment specified in part 1. of subparagraph (b) shall meet the performance specifications in the Federal Register, Vol, 40, No. 194. The monitoring equipment shall also be installed, calibrated, operated and maintained in accordance with the procedures in this reference.

(d) 1. Each owner or operator of any air contaminant source directed by the Technical Secretary to monitor and report on specified air contaminants shall develop and submit a detailed monitoring program; and order and install sampling equipment within the following time schedule:

(i) Within 60 days after designation by the Technical Secretary of those air contaminants to be monitored, the owner or operator of the air contaminant source shall submit a detailed monitoring program for approval by the Technical Secretary.

(ii) Within 30 days after themonitoring program has been approved in in writing by the Technical Secretary, sampling and monitoring equipment shall be ordered. The order shall specify a delivery date that is as expeditious as possible.

(iii) Within 90 days after delivery of the equipment the owner or operator of the air contaminant source shall place said equipment in effective operation in accordance with its approved monitoring program.

2. Any owner or operator required by subparagraph (b) to monitor must follow the schedule outlined in part 1. above with the exception that the detailed monitoring program must be submitted to the Technical Secretary within one hundred twenty (120) days of the effective date of the appropriate designating subpart of subparagraph (b) and not as specified in subpart (i) of the above part 1.

(e) Monitoring System Malfunction.

Due allowance for failure to monitor shall be made during any period of monitoring system malfunction, provided that the source owner or operator shows, to the satisfaction of the Technical Secretary, that the malfunction was unaviodable and is being repaired as expeditiously as practicable and that a log of all such malfunctions is being kept by the owner or operator, including time malfunction began, when it was detected, what was wrong, what was done to correct the malfunction, and when the malfunction was corrected.

(2) RECORDING AND REPORTING

(a) Records and reports as the Technical Secretary shall prescribe on air contaminant emissions, ambient concentrations or fuel analyses shall be recorded, compiled and submitted in a format prescribed by the Technical Secretary.

(b) Owners or operators of facilities subject to subparagraphs (1)(b), are required to submit a written report of excess emissions for each calendar year or quarter and the nature and cause of the excess emissions, if known. The averaging period used for data reporting can be obtained from the Technical Secretary.

(i) For opacity measurements the summary shall consist of the magnitude in actual percent opacity of all one-minute averages of opacity greater than the opacity standard in the applicable plan for each hour of operation of the facility minus the five minute exempt period. Average values may be obtained by integration over the averaging period or by arithmetically averaging a minimum of four equally spaced, instantaneous opacity measurements per minute.

(ii) For gaseous measurements the summary shall consist of emission averages, in the units of the applicable standard, for each averaging period during which the applicable standard was exceeded.

(iii) The date and time identifying each period during which the continuous monitoring system was inoperative, except for zero and span checks, and the nature of system repairs or adjustment shall be reported. The Technical Secretary may require proof of continuos monitoring system performance whenever system repairs or adjustments have been made.

(iv) When no excess emissions have occurred and the continuous monitoring system(s) have not been inoperative, repaired, or adjusted, such information shall be included in the report.

(v) Maintain a file of all information reported in the quarterly summaries, and all other data collected either by the continuous monitoring system or as necessary to convert monitoring data to the units of the applicable standard for a minimum of two years from the date of collection of such data or submissions of such summaries.

(vi) Owners or operators of air contaminant sources, subject to subparagraph (1)(b) of this Rule are required to use the procedure outlined in the Federal Register, Vol. 40, No. 194 (Appendix P, Paragraph 50) for converting monitoring data to units of the standard where necessary.

Authority: T.C.A. Section 53-3412. Administrative History. Original Rule certified June 7, 1974. Amended effective February 9, 1977.

1200-3-10-.03 MALFUNCTION OF EQUIPMENT, REPORTS REQUIRED.

(1) In the case of shutdown of air pollution control equipment for necessary scheduled maintenance, the intent to shut down such equipment shall, except as provided in paragraph .03, (2), of this Chapter, be reported to the Technical Secretary at least twenty-four (24) hours prior to the planned shutdown. Such prior notice shall include, but is not limited to the following:

(a) Identification of the specific facility to be taken out of service, as well as its location and permit number.

(b) The expected length of time that the air pollution control equipment will be out of service.

(c) The nature and quantity of emissions of air contaminants likely to occur during the shutdown period.

(d) Measures such as the use of off-shift labor and equipment that will be taken to minimize the length of the shutdown period.

(2) EXCEPTIONS TO SHUTDOWN REPORTING REQUIREMENTS.

(a) The reports described in paragraph .03,(1) of this Chapter shall not be required when, during the shutdown referred to therein, the air contaminants are handled through alternate air pollution control equipment.

(b) When shutdowns referred to in paragraph .03, (1) of this Chapter are on a routine schedule, the report to the Technical Secretary may be furnished on an annual basis and shall list the dates and times of the routine scheduled shutdowns during the following year.

(3) When any emission source, air pollution control equipment, or related facility breaks down in such a manner as to cause the emission of air contaminants for an anticipated or actual duration of at least twenty-four (24) hours in violation of these regulations, or of sufficient duration to cause damage to property or public health, the person responsible for such equipment shall immediately notify the Technical Secretary of such failure or breakdown and provide a statement giving all pertinent

facts, including the estimated duration of the breakdown. The Technical Secretary shall be notified when the condition causing the failure or breakdown has been corrected and the equipment is again in operation.

Authority: T.C.A. Section 53-3412. Administrative History. Original Rule certified June 7, 1974. Rule Amended: filed May 17, 1974, effective June 16, 1974.

CHAPTER 1200-3-12
METHODS OF SAMPLING AND ANALYSIS

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1200-3-12-.02 Ambient Air Sampling and Analysis
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1200-3-12-.01 GENERAL

(1) It is explicitly implied that in addition to and consistent with specific methods of sampling and analysis described herein, that samples will be taken in such number, duration and location as to be statistically significant and representative of the condition which the sample(s) purport to evaluate.

(2) Where specific materials, equipment or procedures are specified, it shall be permissible to use other materials, equipment or procedure where it has been reliably demonstrated that their use produces results comparable to that which would have been obtained by use of the specified materials, equipment or procedures.

Authority: T. C. A. Section 53-3412. Administrative History. Original Rule certified June 7, 1974. Amended in its entirety February 9, 1977.

1200-3-12-.02 PROCEDURES FOR AMBIENT SAMPLING ANALYSIS

(1) Procedures for sulfur dioxide, suspended particulate, photochemical oxidants, carbon monoxide, and non-methane hydrocarbons may be found in Federal Register, Volume 36, Number 84 dated April 30, 1971. The tentative sampling and analytical procedures for nitrogen dioxide may be found in the Federal Register, Volume 38, Number 110 dated June 8, 1973. The procedure for sampling and analyzing atmospheric fluorides shall conform with the method adopted by the American Society for Testing Materials in 1958 and bearing ASTM designation D1606-58T.

(2) The Technical Secretary may approve the use of equivalent or alternative sampling procedures. He may use as a guide in doing this, the performance specifications for instrumentation and methods as established in the appropriate Federal Register.

(3) Procedure for measuring soiling index. Air is drawn through Whatman No. 4 paper at an average face velocity of about 45 feet per minute. The increase in optical density of the paper due to deposit of particulate as measured by light transmission and reported as COH unit per 1000 linear feet of air passed through the filter. By definition one COH unit is equal to 100 times the optical density. Sampling time should be selected so that for significant soiling the percent light transmission through the test spot will be between 50 and 90 percent of that through clean paper. The sample probe inlet should be protected to prevent entry of rain and located at least 10 feet above ground level.

Authority: T.C.A. Section 53-3412. Administrative History. Original Rule certified June 7, 1974. Amended effective February 9, 1977.

1200-3-12-.03 SOURCE SAMPLING AND ANALYSIS. The methods set forth in this section shall be applicable for determining compliance with emission standards.

(a) SAMPLE AND VELOCITY TRAVERSES.-Sample and velocity traverses shall be determined by the method outlined in the Federal Register, Volume 36, Number 247, December 23, 1971, with this added condition: "If traverse readings are within plus or minus 10% average, 1, 2 or 3 points (corrected to average) may be used in subsequent tests. One test in 3 must be a traverse."

(b) STACK GAS VELOCITY DETERMINATION.-Determination of Stack Gas Velocity (Type S Pitot Tube) shall be determined by the method outlined in the Federal Register, Volume 36, Number 247, December 23, 1971, except in such instances where a Type S Pitot Tube is not applicable.

(c) GAS ANALYSIS.-Gas analysis for carbon dioxide, excess air and dry molecular weight shall be accomplished by the method outlined in the Federal Register, Volume 36, Number 247, December 23, 1971, or another type of test procedure that is direct indicating and/or recording approved by the Technical Secretary.

(d) DETERMINATION OF MOISTURE IN STACK GASES.-Moisture shall be determined by the condenser method as specified in the Federal Register, Volume 36, Number 247, December 23, 1971, or other technique approved by the Technical Secretary.

(e) DETERMINATION OF PARTICULATE EMISSIONS.-The basic design of the sampling train is left to the individual, if certain criteria are observed to assure high collection efficiency and standard analysis of the collected particulates.

1. DESCRIPTION OF SAMPLING APPARATUS.

(i) This apparatus shall include interchangeable sampling nozzles or probes, of various diameters, a filter effective for the removal of particulates exceeding 0.3 micron diameter of solid or liquid, a suitable number of impingers to reduce condensible vapors to liquid or solid particulate matter, and appropriate connecting tubing at temperatures above the aqueous dewpoint of the gases. All materials of construction shall be resistant to corrosive elements in the flue gases, e.g., SO_2, NO_x and elevated temperatures.

(ii) This filter assembly shall be maintained above the aqueous dewpoint of the flue gases throughout the sampling operation. To accomplish this, the filter assembly may be disposed inside the gas flue to be completely bathed by the hot gas stream; or it may be disposed outside the gas stream, provided the following precautions are taken:

(I)If the filter is disposed outside the hot gas flue, a temperature indicator, e.g., thermocouple, shall be provided at the sample filter gas exit to monitor the filter temperature above the aqueous dewpoint of the fule gases at all times. Auxiliary heating elements for tubing and filter holder shall be provided to maintain specified temperatures when required.

(II) Deposits in the tube connecting the probe to the exterior filter shall be quantitatively removed by washing with a suitable liquid and by brushing, the weight of the solids recovered therefrom being added to the weight found in the filter.

(iii)Provisions shall be included for cooling the gas stream to standard conditions (70°) to reduce condensible vapors to liquids or solid particulate matter, and for cooling the condensed particles, including water that may be formed by condensation of water vapor in the sample. This shall be accomplished by passage through bubblers provided with an orifice submerged in water through which the gas stream passes at a velocity of approximately 100 meters per second. The bubblers shall be immersed in an ice bath to minimize evaporation. A trap of suitable shape and dimensions for the collection of overflow or overspray shall be provided downstream from the bubblers.

(iv)An indicating flowmeter shall be provided and preferably located in the train at a point preceding the source of suction, preceded by a trap to prevent condensed water from entering the flowmeter; and a vacuum gauge adjacent to the flowmeter to indicate the absolute pressure of the gas passing through the orifice meter.

(v) Operation charges comprising either graphs or tables shall be prepared and be available as a part of the apparatus, to indicate proper sampling rates as a function of gas density in the stack and at the flowmeter.

2. ANALYTICAL RESULTS.-Analytical results shall be accomplished as outlined in the appendix of the Federal Register, Volume 36, Number 247, December 23, 1971, for the filter catch and washings up to the filter. Inclusion or exclusion of material collected in the impinger train as "particulate matter" and method of analysis will be determined on an individual air contaminant source bases.

3. EQUIVALENT METHODS.-Those procedures demonstrated to yield equivalent results and approved by the Technical Secretary may be used for sampling and analysis of particulate matter. Stack sampling methods promulgated by the Environmental Protection Agency for specified air contaminant sources are considered to be equivalent methods and therefore acceptable.

(f) MEASUREMENT OF SULFUR DIOXIDE IN STACK GASES.

1. The approved procedure for measuring Sulfur Dioxide in stack gases is the method contained in Chapter 3 of the Tennessee Department of Public Health's January, 1975 edition of the Source Sampling Manual with errata sheet dated August 11, 1975.

2. EQUIVALENT METHODS. Many new and improved methods of continuous gaseous monitoring in stacks are now in use. Any method of stack sampling approved by the Technical secretary may be used in accordance with good professional practice. Stack sampling methods promulgated by the Environmental Protection Agency for specified air contaminant sources are considered to be equivalent methods and therefore acceptable.

(g) MEASUREMENT OF SULFURIC ACID (H_2SO_4) IN STACK GASES

1. The approved procedures for measuring sulfuric acid (H_2SO_4) in stack gases are the Shell Development Company Method and the Monsanto Company Method.

   REFERENCE: (1) Shell Development Company Method

   Atmospheric Emission from Sulfuric Acid Manufacturing Processes, Public Health Service Publication 999-AP-13 (1965), Appendix B, pages 85-87.

   REFERENCE: (2) Monsanto Company Method

   Atmospheric Emission from Sulfuric Acid Manufacturing Processes, Public Health Service Publication, 999-AP-13, (1965), Appendix B, pages 63-84.

2. Any method of stack sampling approved by the Technical Secretary may be used in accordance with good professional practice. The stack sampling method promulgated by the Environmental Protection Agency in the Federal Register, Vol. 36, No. 247, December 23, 1971, is considered to be an equivalent method.

(h) MEASUREMENT OF NITROGEN DIOXIDE IN STACK GASES

1. The approved procedures for measuring nitrogen dioxide (NO_2) in stack gases are the Hydrogen Peroxide Method and Phenoldisulfonic Acid Method.

   REFERENCE: (1) Hydrogen Peroxide Method

   Atmospheric Emission from Nitric Acid Manufacturing Processes, Public Health Service Publication No. 999-AP-27 (1966) Appendix A, pages 43-45.

   REFERENCE: (2) Phenoldisulfonic Acid Method

   Atmospheric Emissions from Nitric Acid Manufacturing Process, Public Health Service Publication No. 999-AP-27 (1966), Appendix A, pages 47-49.

2. EQUIVALENT METHODS. Many new and improved methods of continuous gaseous monitoring in stacks are now in use. Any method of stack sampling approved by the Technical Secretary may be used in accordance with good professional practice. Stack sampling methods promulgated by the Environmental Protection Agency for specified air contaminant sources are considered to be equivalent methods and therefore acceptable.

Authority: T.C.A. Section 53-3412. Administrative History. Original Rule certified June 7, 1974. Amended in its entirety February 9, 1977.

RULES
OF
TENNESSEE DEPARTMENT OF PUBLIC HEALTH
BUREAU OF ENVIRONMENTAL HEALTH SERVICES
DIVISION OF AIR POLLUTION CONTROL

CHAPTER 1200-3-14
CONTROL OF SULFUR DIOXIDE EMISSIONS

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1200-3-14-.01 General Provisions
1200-3-14-.02 Non-Process Emission Standards
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1200-3-14-.01 GENERAL PROVISIONS.

(1)

(a) For the purpose of this Chapter, each county in Tennessee will be classified by the Board into one of six categories, defined as Class I, Class II, Class III, Class IV, Class V and Class VI.

(b) Each class has been established with the essential limit necessary to attain and/or maintain ambient air quality standards based on measured and predicted air quality.

(2) The county classifications are as follows:

(a) Class I - Polk

(b) Class II - Humphreys, Maury, Roane

(c) Class III - Sullivan

(d) Class IV - Shelby

(e) Class V - Anderson, Davidson, Hamilton, Hawkins, Knox, Rhea

(f) Class VI - All other counties

Authority: T.C.A. Section 53-3412. Administrative History. Original Rule certified June 7, 1974. Amended effective March 20, 1976.

1200-3-14-.02 NON-PROCESS EMISSION STANDARDS.

(1) Fuel Burning Installation in Operation Prior to April 3, 1972.

(a) The owner or operator of a fuel burning installation shall not cause, suffer, allow or permit the emissions from that source of sulfur dioxide in excess of that contained in Table 1:

TABLE 1

ALLOWABLE SO_2 EMISSIONS FOR FUEL BURNING INSTALLATIONS IN TERMS OF POUNDS PER MILLION BTU/HR HEAT INPUT

(One Hour Average)

Rated Capacity	Class I	Class II	Class III	Class V	Class V
greater than 1000 x 10^6 BTU/hr.	1.2	1.2	2.4	4.0	5.0
less than 1000 x 10^6 BTU/hr.	1.6	5.0	2.4	4.0	5.0

(b) The owner or operator of a fuel burning installation in a Class IV County shall not cause, suffer, allow or permit emissions from that source of sulfur dioxide in excess of those listed in Table 2 or the following equation:

TABLE 2

FUEL	EMISSION LIMIT (one hour average)
Coal	4.0 lbs $SO_2/10^6$ BTU
No. 5 and No. 6 fuel oil and solid fuels other than coal	2.7 lbs $SO_2/10^6$ BTU
All other fuels	0.5 lbs $SO_2/10^6$ BTU

$$Q_{SO_2} = \frac{4.0\,X + 2.7Y + 0.5Z}{X + Y + Z}$$

Q_{SO_2} = Allowable Sulfur Dioxide Emissions in lbs $SO_2/10^6$ BTU

X = Heat input from coal

Y = Heat input from No. 5 or No. 6 fuel oil and solid fuels other than coal

Z = Heat input from all other fuel

(c) In addition to the requirements of subparagraphs (a) and (b), every owner or operator of a fuel burning installation having a total rated capacity greater than 1000 million BTU per hour shall:

1. Demonstrate, to the satisfaction of the Technical Secretary, that the sulfur dioxide emitted, either alone or in contribution to other sources, will not interfere with attainment and maintenance of any primary or secondary ambient air quality standard.

2. Install and maintain air quality sensors to monitor attainment and maintenance of ambient air quality standards in the areas influenced by the emissions from such installation. Such shall be done in a manner prescribed by the Technical Secretary. Results of such monitoring shall be provided to the Technical Secretary in a manner and form as he shall direct.

(d) For purpose of this part, the total heat input (based on maximum rated capacity) from all fuel combustion units at a plant, premises or installation shall be used for determining the maximum allowable emission of sulfur dioxide that passes through a stack or stacks. The heat value of the fuel that is not released within the fuel burning equipment shall not be considered as part of the heat input to the fuel burning installation.

(2) Fuel Burning Equipment Constructed After April 3, 1972.

(a) Fuel burning equipment with a rated capacity of 250 million BTU per hour or less heat input, shall not cause, suffer, allow or permit the emission of sulfur dioxide in excess of 1.6 pounds per million BTU heat input (one hour average) in a Class I county, 2.4 pounds in a Class III county, 4.0 pounds in Class IV and V counties, nor in excess of 5.0 pounds per million BTU heat input (one hour average) in a Class II or VI county.

(b) The owner or operator of a fuel burning equipment with a rated capacity greater than 250 million BTU per hour heat input shall not cause, suffer, allow or permit the emissions from that source of sulfur dioxide in excess of the following:

1. .80 lbs per million BTU heat input, maximum 1 hour average, when liquid fossil fuel is burned.

2. 1.2 lbs per million BTU heat input, maximum 1 hour average, when solid fossil fuel is burned.

3. Where different fossil fuels are burned simultaneously in any combination, the applicable standard shall be determined by proration. Compliance shall be determined by using the following formula:

$$\frac{Y\,(0.80) + Z\,(1.2)}{Y + Z}$$

(c) Where:

1. Y is the percent of total heat input derived from liquid fossil fuel and,

2. Z is the percent of total heat input derived from solid fossil fuel.

Authority: T.C.A. Section 53-3412. Administrative History. Original Rule certified June 7, 1974. Amended effective March 20, 1976.

1200-3-14-.03 PROCESS EMISSION STANDARDS.

(1) On and after July 1, 1975, the owner or operator of an air contaminant source located in a Class I county shall not cause, suffer, allow or permit the emission from that source of sulfur oxides (calculated as sulfur dioxide) in excess of 500 parts per million, 0.05 percent by volume, dry basis (one hour average).

(2) On and after July 1, 1975, the owner or operator of an air comtaminant source located in a Class II or Class III county shall not cause, suffer, allow or permit the emission from that source of sulfur dioxide in excess of 1000 parts per million, 0.10 percent by volume, dry basis (one hour average).

(3) On and after July 1, 1975, the owner or operator of an air contaminant source located in a Class IV, V or VI county shall not cause, suffer, allow or permit the emission from that source of sulfur dioxide in excess of 2,000 parts per million, 0.20 percent by volume, dry basis (one hour average).

(4) A process source in a Class IV county as an alternative to the standard in paragraph (3) above may request from the Technical Secretary of the Tennessee Air Pollution Control Board to be regulated by not being allowed to exceed their sulfur dioxide emission capacity in 1974, on a twenty-four and an annual basis. These emissions will be specified in a Board Order, as a permit condition, or other legally enforceable manner. The Technical Secretary may approve such a request after being given adequate proof that this alternate standard will not cause any air quality standards to be violated and the company has an adequate continuous air monitoring network for determining the impact of its emissions.

(5) No person shall cause, suffer, allow or permit the emissions from any new air contaminant source in excess of those limits specified in Chapter 1200-3-14-.03, paragraph (1), (2) or (3), whichever is applicable. Regardless of the specific emission standard, new sources shall utilize the best available control technology as deemed appropriate by the Technical Secretary of the Tennessee Air Pollution Control Board.

(6) In addition to the requirements of rule .03, paragraph (1), (2) and (3), above, every owner or operator of an existing process emission source emitting more than 1000 tons of SO_2 during the calendar year 1972 or any other calendar year thereafter shall:

(a) Demonstrate, to the satisfaction of the Technical Secretary, that the sulfur oxides emitted, either alone or in contribution to other sources, will not interfere with attainment and maintenance of any primary or secondary ambient air quality standard.

(b) Install and maintain air quality sensors to monitor attainment and maintenance of ambient air quality standards in the areas influenced by the emissions from such installation. Such shall be done in a manner prescribed by the Technical Secretary. Results of such monitoring shall be provided to the Technical Secretary in a manner and form as he shall direct.

(7) All calculations performed pursuant to demonstration required by rule .03(6), shall assume that the process emission source is operating at a maximum rated capacity.

(8) For purposes of this Chapter, thermal oxidizers and incinerators shall be construed as process emission sources.

Authority: T.C.A. Section 53-3412. Administrative History. Original Rule certified June 7, 1974. Amended effective March 20, 1976.

131.03.03 Visible Emissions

.001. No person may cause, suffer, allow or permit visible emissions from any stationary flue to exceed an opacity of 30% averaged over a 5-minute period. No person may cause, suffer, allow or permit visible emissions from any stationary flue beginning construction after January 31, 1972, to exceed an opacity of 20% averaged over a 5-minute period. Visible emissions during the cleaning of a firebox or the building of a new fire, sootblowing, equipment changes, ash removal and rapping of precipitators may exceed the limits set forth in Rule 131.03.03.001 for a period aggregating not more than five minutes in any sixty consecutive minutes, nor more than six hours in any ten-day period.

.002. No person may cause, suffer, allow or permit visible emissions from a waste gas flare for more than five minutes in any 2-hour period except as provided in Rule 131.01.00.012(1) of the General Rules.

.006. No person may cause, suffer, allow or permit visible emissions from any stationary flue having a total flow rate of 100,000 acfm or more to exceed an opacity of 15% averaged over a 5-minute period unless an optical instrument capable of measuring the opacity of emissions is installed in the flue. Records of all such measurements shall be retained as provided for in Rule 131.01.00.009 of the General Rules. The provision shall not apply to flues having gas streams containing moisture which interferes with proper instrument operation, if so determined by the Executive Director.

.007. Contributions from uncombined water shall not be included in determining compliance with Rules 131.03.03.001-.007. The burden of proof which establishes the applicability of Rule 131.03.03.007 shall be upon the person seeking to come within its provisions.

131.04.01 Control of Sulfur Dioxide

.001. No person may cause, suffer, allow or permit emissions of sulfur dioxide from any sulfuric acid plant burning elemental sulfur to exceed the allowable rates specified in Table 1 and/or Curve A of Figure 1.

(a) If a source has an effective stack height less than the standard effective stack height as determined from Table 2 and/or Curve A of Figure 2, the allowable emission rates must be reduced by multiplying it by:

$$\left(\frac{\text{Effective Stack Height}}{\text{Standard Effective Stack Height}}\right)^2$$

(b) Effective stack height shall be calculated by the following equation:

$$h_e = h + 0.083 v_e D_e \left[1.5 + 0.82 \left(\frac{T_e - 550}{T_e} \right) D_e \right]$$

Where:

h_e = Effective stack height in feet (ft)

h = Physical stack height above ground level in feet (ft)

v_e = Stack exit velocity in feet per second (ft/sec)

D_e = Stack exit inside diameter in feet (ft)

T_e = Stack exit temperature in degrees Rankine (°R)

.002. No person may cause, suffer, allow or permit emissions of sulfur dioxide from any sulfuric acid plant to exceed the allowable rates specified in Table 3 and/or Curve B of Figure 1.

(a) If a source has an effective stack height less than the standard effective stack height as determined from Table 4 and/or Curve B of Figure 2, the allowable emission rates must be reduced by mulitplying it by:

$$\left(\frac{\text{Effective Stack Height}}{\text{Standard Effective Stack Height}}\right)^2$$

TABLE 1

SULFURIC ACID PLANTS BURNING ELEMENTAL SULFUR

ALLOWABLE SULFUR DIOXIDE EMISSION RATES FOR SPECIFIC FLOW RATES

EFFLUENT FLOW RATE	RATE OF EMISSION
scfm	lb/hr
1,000	19.8
2,000	39.6
4,000	79.2
6,000	119.0
8,000	158.0
10,000	198.0
20,000	396.0
40,000	792.0
60,000	1190.0
80,000	1580.0
100,000	1983.0

Interpolation and extrapolation of the data in this Table shall be accomplished by the use of the equation $E=0.0198\ q$, where E is the allowable emission rate in lb/hr and q is the stack effluent flow rate in scfm.

FIGURE 1

ALLOWABLE SULFUR DIOXIDE EMISSION RATES FOR SPECIFIC FLOW RATES

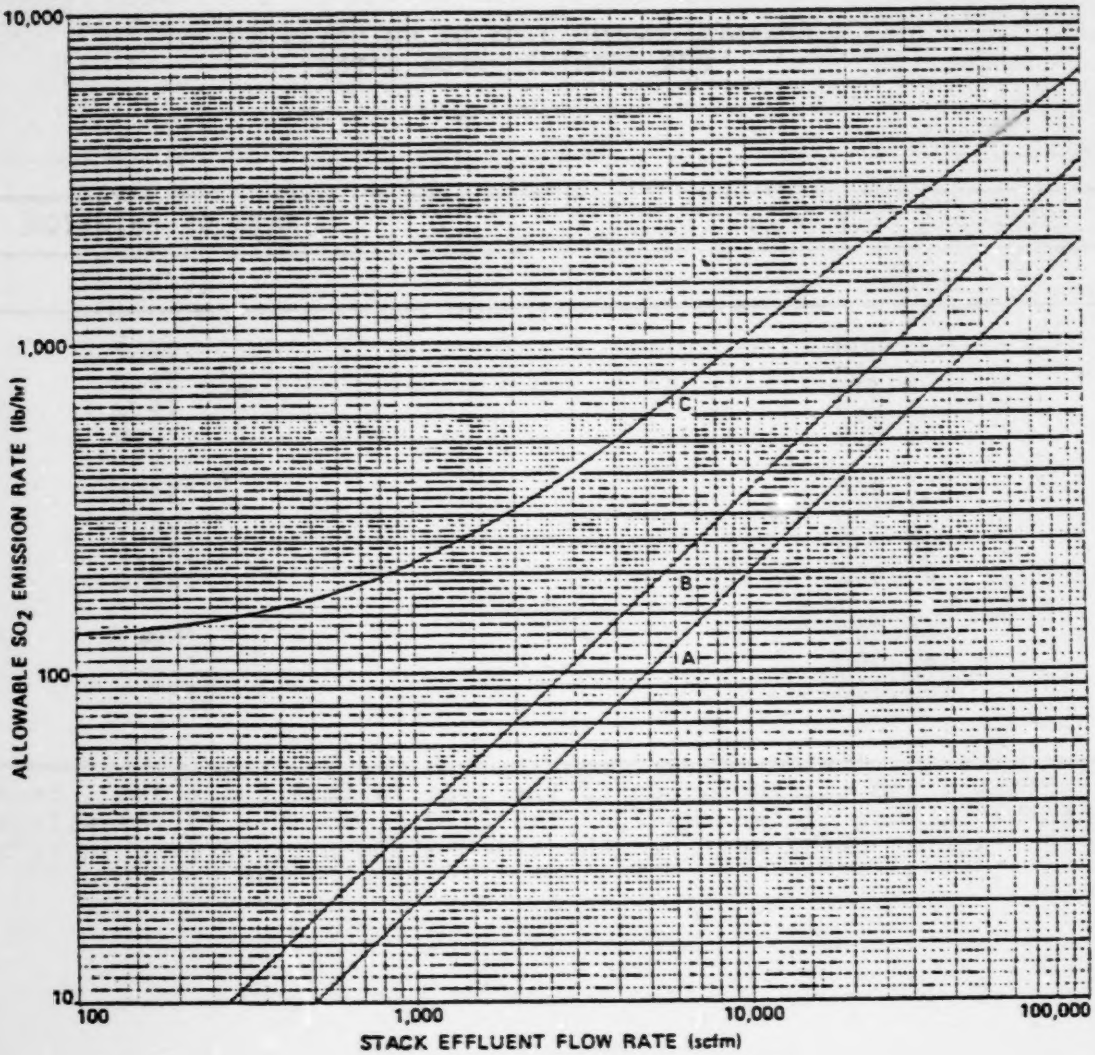


TABLE 2

SULFURIC ACID PLANTS BURNING ELEMENTAL SULFUR

STANDARD EFFECTIVE STACK HEIGHT BASED ON SPECIFIC FLOW RATES

EFFLUENT FLOW RATE	STANDARD EFFECTIVE STACK HEIGHT
scfm	ft
1,000	28
2,000	40
4,000	56
6,000	69
8,000	79
10,000	89
20,000	125
40,000	177
60,000	217
80,000	250
100,000	280

Interpolation and extrapolation of the data in this Table shall be accomplished by the use of the equation $H_e = 0.885\ q^{0.5}$, where H_e is the standard effective stack height in ft. and q is the effluent flow rate in scfm.

FIGURE 2

STANDARD EFFECTIVE STACK HEIGHT BASED ON SPECIFIC FLOW RATES

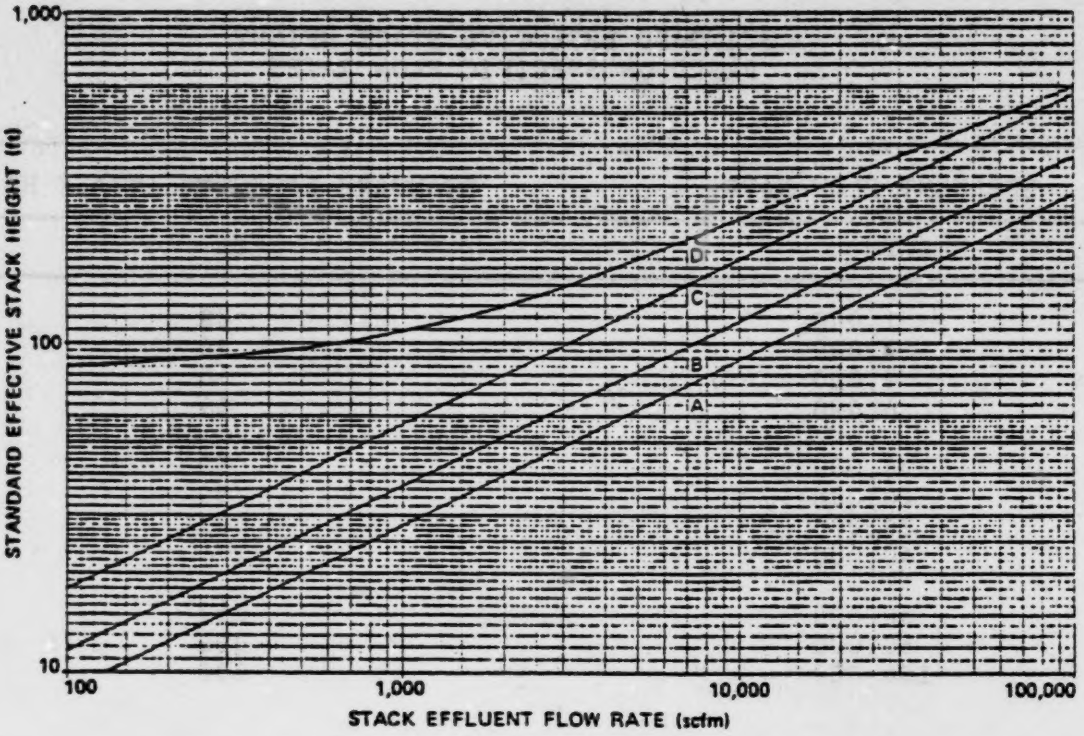


TABLE 3

SULFURIC ACID PLANTS BURNING OTHER THAN ELEMENTAL SULFUR

ALLOWABLE SULFUR DIOXIDE EMISSION RATES FOR SPECIFIC FLOW RATES

EFFLUENT FLOW RATE scfm	RATE OF EMISSION lb/hr
1,000	34.7
2,000	69.4
4,000	138.8
6,000	208.2
8,000	277.6
10,000	347.0
20,000	694.0
40,000	1388.0
60,000	2082.0
80,000	2776.0
100,000	3470.0

Interpolation and extrapolation of the data in this Table shall be accomplished by the use of the equation $E = 0.0347\ q$, where E is the allowable emission rate in lb/hr and q is the stack effluent flow rate in scfm.

TABLE 4

SULFURIC ACID PLANTS BURNING OTHER THAN ELEMENTAL SULFUR

STANDARD EFFECTIVE STACK HEIGHT BASED ON SPECIFIC FLOW RATES

EFFLUENT FLOW RATE scfm	STANDARD EFFECTIVE STACK HEIGHT ft
1,000	37
2,000	52
4,000	74
6,000	91
8,000	105
10,000	117
20,000	165
40,000	234
60,000	287
80,000	331
100,000	370

Interpolation and extrapolation of the data in this Table shall be accomplished by the use of the equation $H_e = 1.17\ q^{0.5}$, where H_e is the standard effective stack height in ft. and q is the stack effluent flow rate in scfm.

131.04.01

(b) Effective stack height shall be calculated by the equation in Rule 131.04.01.001(b).

.003. No person may cause, suffer, allow or permit emissions of sulfur dioxide from any sulfur recovery plant to exceed the allowable rates specified in Table 5 and/or Curve C of Figure 1.

(a) If a source has an effective stack height less than the standard effective stack height as determined from Table 6 and/or Curve D of Figure 2, the allowable emission rates must be reduced by multiplying it by:

$$\left(\frac{\text{Effective Stack Height}}{\text{Standard Effective Stack Height}}\right)^2$$

(b) Effective stack height shall be calculated by the equation in Rule 131.04.01.001(b).

.004. No person may cause, suffer, allow or permit emissions of sulfur dioxide from nonferrous smelters to exceed 0.8% by volume of the total flue gas.

(a) If a source has an effective stack height less than the standard effective stack height as determined from Table 7 and/or Curve C of Figure 2, the allowable emission rates must be reduced by multiplying it by:

$$\left(\frac{\text{Effective Stack Height}}{\text{Standard Effective Stack Height}}\right)^2$$

(b) Effective stack height shall be calculated by the equation in Rule 131.04.01.001(b).

.005. No person may cause, suffer, allow or permit emissions of sulfur dioxide from any solid fossil fuel fired steam generator to exceed 3.0 lbs. per million Btu heat input. New proven technology must be applied in removing sulfur dioxide from the emission from solid fossil fuel fired steam generators when it becomes available.

.006. No person may cause, suffer, allow or permit emissions of sulfur dioxide from any liquid fuel fired steam generator, furnace or heater to exceed 440 ppm, by volume.

(a) If a source has an effective stack height less than the standard effective stack height as determined from Table 8 and/or Figure 3, the allowable emission concentration must be reduced by multiplying it by:

$$\left(\frac{\text{Effective Stack Height}}{\text{Standard Effective Stack Height}}\right)^2$$

TABLE 5

SULFUR RECOVERY PLANTS

ALLOWABLE SULFUR DIOXIDE EMISSION BASED ON SPECIFIC FLOW RATES

EFFLUENT FLOW RATE scfm	RATE OF EMISSION lb/hr
1,000	214
2,000	305
3,000	396
4,000	487
5,000	579
6,000	670
7,000	759
8,000	845
9,000	929
10,000	1012
20,000	1766
30,000	2447
40,000	3084
50,000	3690

Interpolation and extrapolation of the data in this Table for stack effluent flow rates less than or equal to 4,000 scfm shall be accomplished by the use of the equation $E = 123.4 + 0.091 q$, where E is the allowable emission rate in lb/hr and q is the stack effluent flow rate in scfm. Interpolation and extrapolation of the data for stack effluent flow rates in excess of 4,000 scfm shall be accomplished by the use of the equation $E = 0.614 q^{0.8042}$

TABLE 6

SULFUR RECOVERY PLANTS

STANDARD EFFECTIVE STACK HEIGHT BASED ON SPECIFIC FLOW RATES

EFFLUENT FLOW RATE	STANDARD EFFECTIVE STACK HEIGHT
scfm	ft
100	85
500	96
1,000	109
2,000	129
3,000	148
4,000	164
5,000	178
6,000	192
7,000	204
8,000	215
9,000	226
10,000	236
20,000	311
30,000	366
40,000	411
50,000	450
60,000	484
80,000	544
100,000	595

Interpolation and extrapolation of the data for stack effluent flow rates less than or equal to 4,000 scfm shall be accomplished by the use of the equation $H_e = 7.4\ 123.4 + 0.091\ q^{0.5}$, where H_e is the standard effective stack height in feet and q is the stack effluent flow rate in scfm. Interpolation and extrapolation of the data for stack effluent in excess of 4,000 scfm shall be accomplished by the use of the equation $H_e = 5.8\ q^{0.402}$.

TABLE 7

(Reference Fig. 4)

NON FERROUS SMELTERS

STANDARD EFFECTIVE STACK HEIGHT BASED ON SPECIFIC FLOW RATES

Column A - Primary Copper Smelter
Primary Lead Smelter (all processes except sintering machine discharge end and equipment ventilation)
Metallurgical Sulfuric Acid Plant

Column B - Primary Zinc Smelter

Column C - Other Primary Smelters
Primary Lead Smelter Sintering Machine Discharge End and Equipment Ventilation

Column D - Secondary Metal Recovery Facilities

EFFLUENT FLOW RATE	STANDARD EFFECTIVE STACK HEIGHT			
SCFM	FEET			
(q)	A (650 PPM)	B (1000 PPM)	C (2500 PPM)	D (3500 PPM)
1,000	16	19	28	37
2,000	22	27	40	52
4,000	32	39	57	74
6,000	39	47	70	91
8,000	45	55	80	105
10,000	50	61	90	117
20,000	71	86	127	165
40,000	100	122	180	234
60,000	122	149	220	287
80,000	141	173	255	331
100,000	158	193	285	370
200,000	224	273	402	523
400,000	316	386	569	740
600,000	387	473	697	906
800,000	447	546	805	1046
1,000,000	500	610	900	1170
Interpolation Constant (K)	0.50	0.61	0.90	1.17

Interpolation and extrapolation of the data in this table shall be acco plished by the use of the equation $He = K (q)^{0.5}$, where "He" is the standard effective stack height in feet, "K" is the interpolation constant shown above and "q" is the effluent flow rate in SCFM.

TABLE 8

STEAM GENERATORS, BOILERS AND HEATERS BURNING LIQUID FUEL

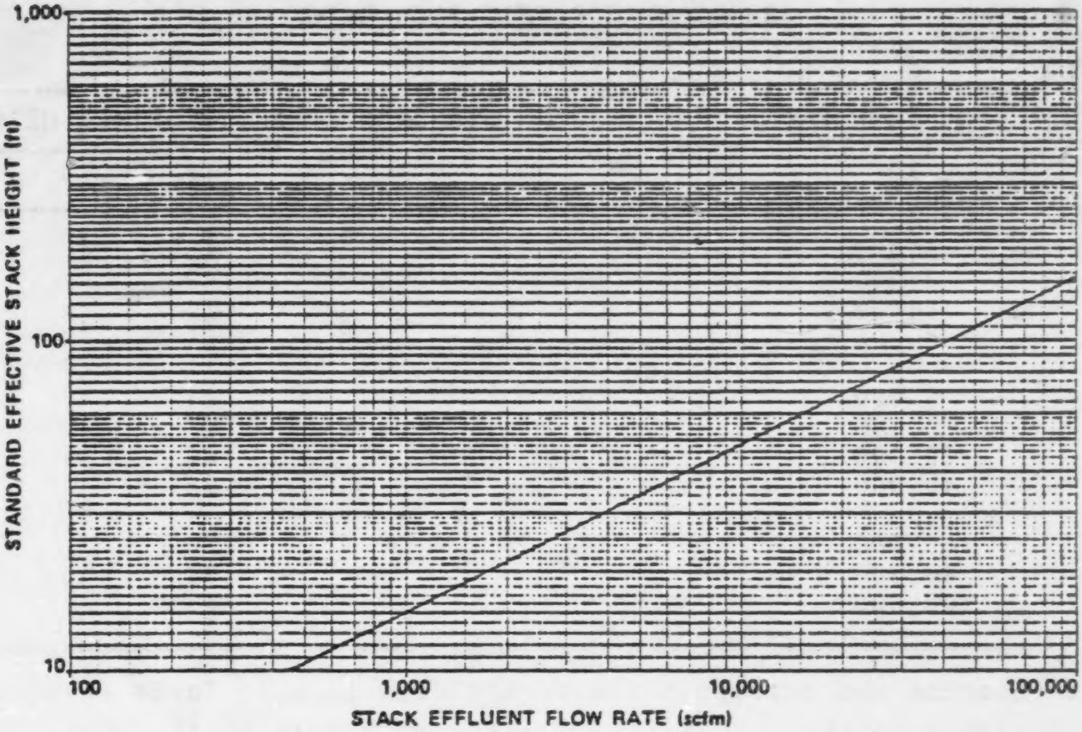
STANDARD EFFECTIVE STACK HEIGHT BASED ON SPECIFIC FLOW RATE

EFFLUENT FLOW RATE scfm	STANDARD EFFECTIVE STACK HEIGHT ft.
1,000	15
2,000	22
4,000	31
6,000	38
8,000	44
10,000	49
20,000	69
40,000	98
60,000	120
80,000	138
100,000	155

Interpolation and extrapolation of the data in this Table shall be accomplished by the use of the equation $H_e = 0.49\ q^{0.50}$, where H_e is the standard effective stack height in feet and q is the stack effluent flow rate in scfm.

FIGURE 3

STANDARD EFFECTIVE STACK HEIGHT
BASED ON SPECIFIC FLOW RATES



(b) Effective stack height shall be calculated by the equation in Rule 131.04.01.001(b).

.011. If any person is unable to comply with Rules 131.04.01.006, 131.04.01.007, 131.04.01.008 or 131.04.01.009, solely because of the non-availability of low sulfur fuels, that person may file with the Texas Air Control Board a Temporary Fuel Shortage Control Plan, which shall include all of the following:

(a) Evidence of the non-availability of low sulfur fuels. Such evidence shall include, but not be limited to statements from suppliers of fuel as to the availability of lower sulfur fuels, the price of such fuels and the expected duration of any periods of non-availability of particular fuels. Such evidence shall be updated semiannually as long as the Temporary Fuel Shortage Control Plan remains on file with the Texas Air Control Board or as long as it can reasonably be concluded that there may be necessity to operace under the Temporary Fuel Shortage Control Plan.

(b) A statement that all emission inventory data required by the Board are complete, accurate and on file with the Board.

(c) Data for each source within the entire plant that utilizes the higher sulfur fuel. The data shall include the type, quantity and sulfur content of all the fuels to be burned, excess air to be used and the associated sulfur abatement procedure to be used, if any.

(d) Any other information as specified by the Board or the Executive Director. The Executive Director may require more frequent and extensive monitoring for persons affected by Rule 131.04.01.011 than would normally be required for persons affected by Rules 131.04.01.006-.009.

.016. This rule is applicable to all processes in nonferrous smelters, including but not limited to roasters, smelting furnaces, converters, sintering machines, blast furnaces, fuming furnaces, retorts and slag treatment plants. This rule is also applicable to sulfuric acid plants in nonferrous smelters which are used to comply with the standards set forth in this rule.

(a) Concentration Limits. No person may cause, suffer, allow or permit emissions of sulfur dioxide to the atmosphere from any process as specified in Rule 131.04.01.016 to exceed the applicable concentration of sulfur dioxide as follows:

	SO_2 ppm (v) Maximum	
	Two Hour Avg.	Six Hour Avg.
(1) Primary Copper Smelter/ for all processes other than those listed below:	---	650
Reverberatory Furnace	---	6000
(2) Primary Zinc Smelter	1000	---
(3) Primary Lead Smelter/ for all processes other than those listed below:	650	---
Sinter Machine Discharge End (Provided gases do not pass through Sinter bed) and Sinter Handling Equipment Emission Collection Systems	2500	---

(4) Other Primary Smelter	2500	---
(5) Secondary Metal Recovery Facility	3500	---
(6) Sulfuric Acid Plant	---	650

(b) Each stack or emission point in a primary smelter or secondary metal recovery facility shall have a standard effective stack height not less than that determined from the appropriate curve of Figure 4 or Table 7. When two or more gas streams either wholly or in part are discharged through a single stack, the combined flow rate of all streams shall be used to determine the required standard effective stack height. If streams with different SO_2 concentration allowables

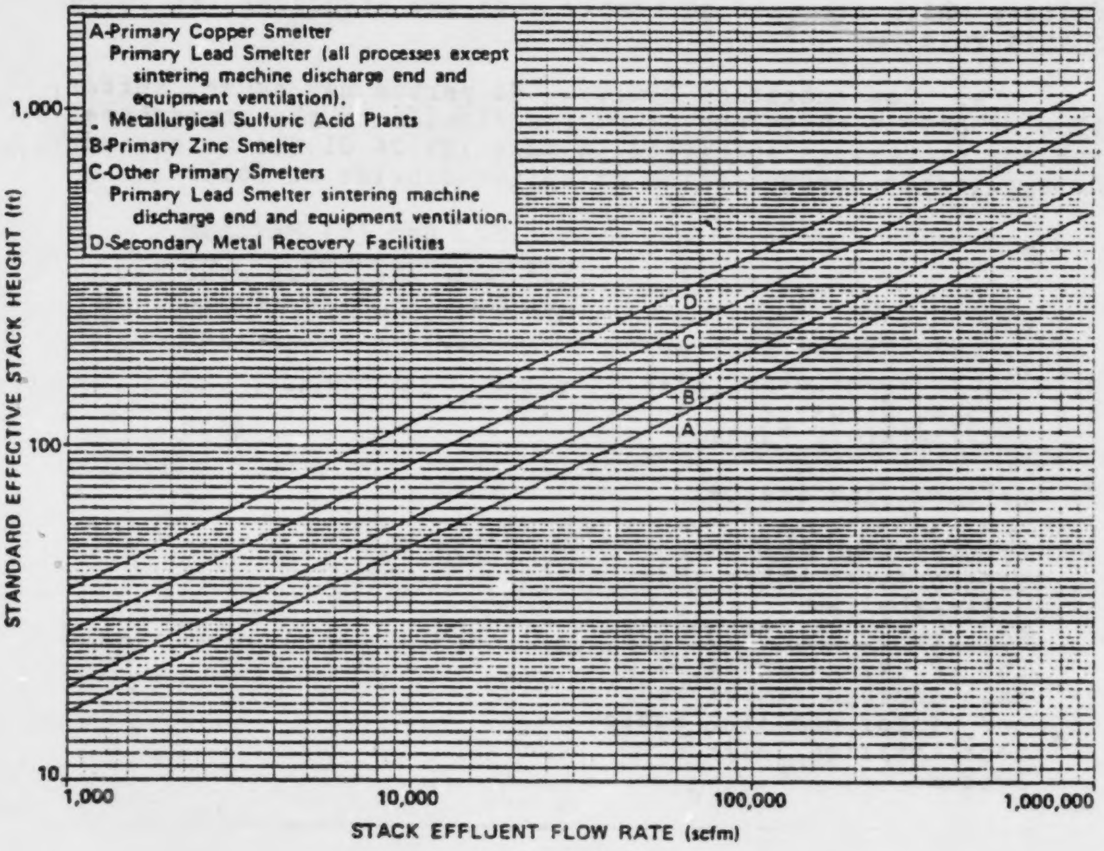
FIGURE 4

NON FERROUS SMELTERS

STANDARD EFFECTIVE STACK HEIGHT

BASED ON SPECIFIC FLOW RATES

(Reference Table 7)



[as determined in Rule 131.04.01.016(a)] are combined into a single stream, the required effective stack height is determined as follows:

(1) Calculate a total combined stream SO_2 concentration allowable as follows:

$$PPM_T = \frac{(PPM_1)(SCFM_1) + (PPM_2)(SCFM_2) + \ldots (PPM_N)(SCFM_N)}{(SCFM_1 + SCFM_2 + \ldots SCFM_N)}$$

Where:

PPM_T = Allowable SO_2 concentration in total combined stream, ppm(v),

PPM_1 = Allowable SO_2 concentration in stream No. 1, ppm(v),

PPM_2 = Same as PPM_1 except for stream No. 2,

PPM_N = Same as PPM_1 except for Nth stream,

$SCFM_1$ = Effluent flow rate of stream No. 1, scfm,

$SCFM_2$ = Same as $SCFM_1$ except for stream No. 2,

$SCFM_N$ = Same as $SCFM_1$ except for Nth stream.

(2) Calculate interpolation constant (K_T) for the total combined stream as follows:

$$K_T = \frac{(PPM_T - PPM_L)\ (K_H - K_L)}{(PPM_H - PPM_L)} + K_L$$

Where:

K_T = Interpolation constant for use in standard effective stack height equation shown below,

PPM_T = Allowable SO_2 concentration in total combined steam calculated above, and

IF PPM_T:	PPM_L	PPM_H	K_L	K_H
650 to 1000	650	1000	0.50	0.61
1000 to 2500	1000	2500	0.61	0.90
2500	2500	3500	0.90	1.17

(3) Calculate standard effective stack height (H_e) for total combined stream as follows:

$H_e = K_T (q)^{0.5}$ feet

Where:

K_T = Interpolation constant calculated above.

$q = (SCFM_1 + SCFM_2 + \ldots SCFM_N)$, scfm.

(c) If a stack or emission point has an effective stack height less than the standard effective stack height as determined in Rule 131.04.01.016(b), the allowable concentration of sulfur dioxide must be reduced by multiplying it by:

$$\left(\frac{\text{Effective Stack Height}}{\text{Standard Effective Stack Height}}\right)^2$$

(d) Effective stack height shall be calculated by the equation in Rule 131.04.01.001(b).

(e) The owner or operator of a nonferrous smelter shall utilize best engineering techniques to capture and vent fugitive SO_2 emissions through a stack or stacks. Such techniques shall include, but not be limited to:

(1) Operating and maintaining all ducts, flues, and stacks in a leakfree condition.

(2) Operating and maintaining all process equipment and gas collection systems in such a fashion that leakage of SO_2 gases will be prevented to the maximum extent possible.

(3) Whenever possible, using gas collection systems and/or ducting collected SO_2 emissions through the tallest stack or stacks serving the facility.

(f) The owner or operator of any primary smelter subject to the provisions of Rule 131.04.01.016 shall install, calibrate, maintain and operate a measurement system(s) approved by the Executive Director for continuously monitoring sulfur dioxide concentrations in the effluent of each process subject to Rule 131.04.01.016(a). The Executive Director shall not require continuous monitoring for sources emitting insignificant amounts of SO_2 into the atmosphere. "Continuous monitoring" is defined as sampling and recording of at least one measurement of sulfur dioxide concentration in each 15-minute period from the effluent of each affected process or the emission control system serving each affected process.

(g) Persons affected by Rule 131.04.01.016 shall be in compliance with the provisions contained therein as soon as practicable, but not later than May 31, 1975. All persons affected by this Rule shall continue to be governed by Rule 131.04.01.004 until compliance with Rule 131.04.01.016 can be achieved, but not later than May 31, 1975, at which time Rule 131.04.01.016 shall supersede Rule 131.04.01.004.

131.04.02 Control of Hydrogen Sulfide

.001. No person may cause, suffer, allow or permit emissions of hydrogen sulfide from a source or sources operated on a property or multiple sources operated on contiguous properties to exceed a net ground level concentration of 0.08 ppm averaged over any 30-minute period if the downwind concentration of hydrogen sulfide affects a property used for residential, business or commercial purposes.

131.04.03 Control of Sulfuric Acid

.001. No person may cause, suffer, allow or permit emissions of sulfuric acid from a source or sources operated on a property or multiple sources operated on contiguous properties to exceed:

(a) A net ground level concentration of 15 μg per cubic meter of air averaged over any 24-hour period; or

(b) A net ground level concentration of 50 μg per cubic meter of air averaged over a one-hour period of time more than once during any consecutive 24-hour period; or

(c) 100 μg per cubic meter of air maximum at any time.

.002. Calculation Methods. Determination of the net ground level concentration shall be performed in accordance with the procedures outlined in Rule 131.04.02.003 for hydrogen sulfide and Rule 131.04.03.002 for sulfuric acid.

.001. Gas Fired Steam Generating Units.

(a) Rules 131.09.00.001(b), 131.09.00.001(c), and 131.09.00.001(d) shall apply only in the Dallas-Fort Worth and Houston-Galveston Air Quality Control Regions.

(b) No person may cause, suffer, allow or permit emissions of nitrogen oxides, calculated as nitrogen dioxide, from any "opposed fired" steam generating unit of more than 600,000 lbs/hour maximum continuous steam capacity to exceed 0.7 lbs/million Btu heat input, maximum two-hour average, at maximum steam capacity. An "opposed fired" steam generating unit is defined as a unit having burners installed on two opposite vertical firebox surfaces.

(c) No person may cause, suffer, allow or permit emissions of nitrogen oxides, calculated as nitrogen dioxide, from any "front fired" steam generating unit of more than 600,000 lbs/hour maximum continuous steam capacity to exceed 0.5 lbs/million Btu heat input, maximum two-hour average, at maximum steam capacity. A "front fired" steam generating unit is defined as a unit having all burners installed in a geometric array on one vertical firebox surface.

(d) No person may cause, suffer, allow or permit emissions of nitrogen oxides, calculated as nitrogen dioxide, from any "tangential fired" steam generating unit of more than 600,000 lbs/hour maximum continuous steam capacity to exceed 0.25 lbs/million Btu heat input, maximum two-hour average, at maximum steam capacity. A "tangential fired" steam generating unit is defined as a unit having burners installed on all corners of the unit at various elevations.

.002. Nitric Acid Manufacturing.

(a) No person may cause, suffer, allow or permit emissions of nitrogen oxides, calculated as nitrogen dioxide, from any nitric acid manufacturing plant to exceed 600 parts per million by volume.

.021. Any person owning or operating a source of air contaminants shall comply with any applicable New Source Performance Standards promulgated by the Environmental Protection Agency pursuant to Section 111 of the Federal Clean Air Act, as amended, and any applicable Emissions Standards for Hazardous Air Pollutants promulgated by the Environmental Protection Agency pursuant to Section 112 of the Federal Clean Air Act, as amended.

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2.2 Visible Emissions (Original Effective date 4/25/71)

2.2.1 Single sources of emission from existing installations except incinerators and internal combustion engines shall be of a shade or density no darker than a No. 2 Ringelmann Chart (40% black) or an equivalent opacity except as provided in Section 2.2.6.

2.2.2 Single sources of emission from any incinerator or any other new installation except internal combustion engines shall be of a shade or density no darker than a No. 1 Ringelmann Chart (20% black) or an equivalent opacity, except as provided in Section 2.2.6.

a. For the purposes of this Section, "new installation" shall mean a plant, process or process equipment, construction of which began following the effective date of the regulation concerned. A modified process unit or system shall be construed as a new installation if a physical change in, or change in the method of a process unit or system, increases the amount of any air pollutant by such unit or system or results in the emissions of any air pollutant not previously emitted. An increase in either production rate or hours of operation alone shall not be considered a change in method of operation.

2.2.3 No owner or operator of a gasoline powered vehicle shall allow, cause or permit the emission of visible contaminants except for starting motion no farther than 100 yards or for stationary operation not exceeding 3 minutes in any hour.

2.2.4 Emissions from diesel engines manufactured after January 1, 1973 shall be of a shade or density no darker than a No. 1 Ringelmann Chart (20% black), or an equivalent opacity, except for starting motion no farther than 100 yards or for stationary operation not exceeding 3 minutes in any hour.

2.2.5 Emissions from diesel engines manufactured before January 1, 1973 shall be of a shade or density no darker than a No. 2 Ringelmann Chart (40% black), or equivalent opacity, except for starting motion no farther than 100 yards or for stationary operation not exceeding 3 minutes in any hour.

2.2.6 Exceptions

a. Excessive emissions resulting from the unavoidable break-down of equipment or procedures must be reported immediately (within 24 hours) to the Executive Secretary. Within five days of the beginning of such an incident, a written report shall be submitted to the Executive Secretary which shall include the cause and nature of the event, estimated quantity of pollutant, time of emissions, and steps taken to control the emission and to prevent recurrence. Such emission shall not be deemed in violation providing this report is considered acceptable to the Executive Secretary. If such emissions are predictable, they are covered by the variance procedure.

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2.2.6

b. When conducting a procedure or using equipment necessary to the operation of a process other than planned maintenance such as, but not limited to, building a new fire, tube blowing, initial warm-up or start-up locomotives, or cleaning grates, the limits specified in these regulations may be exceeded when it can be demonstrated to be unavoidable.

Emissions exceeding the standard as the result of planned maintenance on an air cleaning unit shall not be deemed a violation provided the Executive Secretary is notified prior to the shut-down of the control unit and he determines that simultaneous shut-down of the air pollution source is not practical.

c. For all other excessive emissions the variance procedure may be employed.

d. An emission failing to meet the standard because of the effect of uncombined water shall not be in violation.

2.4 Sulfur Content of Fuels (Original Effective date 9/26/71)

2.4.1 Coal or oil burned in any fuel burning or process installation shall contain no more than 1.0% sulfur by weight or 1.5% sulfur by weight, respectively,** except as provided in Section 2.4.2.

2.4.2 Any person engaged in operating fuel burning equipment using coal or fuel oil, may apply for an exemption from the sulfur content restrictions of Section 2.4.1. His application shall furnish evidence, to the satisfaction of the Executive Secretary, that the fuel burning equipment is operating in such a manner as to prevent the emission of sulfur dioxide in amounts greater than would be produced under the limitations of Section 2.4.1. Control apparatus to continuously prevent the emission of sulfur greater than provided by Section 2.4.1 must be specified in the application for an exemption.

2.4.3 In case an exemption is granted, the operator shall install monitoring devices approved by the Executive Secretary. The operator shall provide the Executive Secretary with a monthly summary of the data from such monitors. This summary shall be such as to show the degree of compliance with Section 2.4.1. It shall be submitted no later than the calendar month succeeding its recording.

2.4.4 Methods for determining sulfur content of coal and fuel oil shall be those methods of the American Society for Testing and Materials.

2.5 Emissions of Sulfur Compounds

2.5.1 New installations with a potential for emission of sulfur compounds as gaseous or mist effluent shall control sulfur oxide emissions as required to avoid exceeding National Primary and Secondary Ambient Air Quality Standards and Federal Standards of Performance for New Stationary Sources.

2.5.6 As interim measures which shall apply until July 31, 1979, existing non-ferrous smelters shall utilize the following procedures to achieve maximum control of sulfur oxide emissions and to insure compliance with the requirements of Section 2.5.2: (a) not discharge to the atmosphere sulfur oxides containing more that 3750 tons per month of sulfur, nor discharge to the atmosphere more than 14% per month of input sulfur to their process (feed driers, reactors, converters), whichever is less. This monthly limitation may be exceeded in the case of shut down of control facilities for maintenance or unavoidable breakdown as described in Section 2.5.3 and Section 2.5.4, above; however, it may not be exceeded on an annual basis. Regardless of the number and frequency of equipment breakdowns or planned or unplanned maintenance as described in Section 2.5.3 and Section 2.5.4, above, the running annual average (average of any 12 consecutive months) shall never exceed 3750 tons/month of sulfur of 14% of input sulfur; (b) employ the best engineering practices to capture fugitive emissions; (c) use available desulfurization units and other gas treatment facilities to the maximum extent practical; (d) make necessary modification in production and treatment facilities, as outlined [illegible] s, specifications and compliance schedules approved by the Executive Secretary, and provide space for installation of additional desulfurization and other gas cleaning units which may be found necessary by experience after such modification to meet applicable emission limitations; and (e) employ a system, approved by the Committee and continuously available for monitoring and predicting ambient air concentrations, and limiting emissions of sulfur compounds by curtailment of operations to insure that short term ambient air quality standards are never exceeded.

5-211

1. Installations Constructed prior to April 30, 1970

No person shall cause, suffer, allow or permit the emission of any air contaminant for more than a period or periods aggregating six (6) minutes in any hour, which has a shade, or density, greater than 40% opacity (No. 2 of the Ringelmann Chart).

At no time shall the visible air contaminants have a shade, density, or appearance greater than 60% opacity (No. 3 of the Ringelmann Chart).

2. Installations Constructed Subsequent to April 30, 1970

No person shall cause, suffer, allow or permit the emission of any visible air contaminant, from installations constructed after the effective date of these regulations for more than a period of periods aggregating six (6) minutes in any hour, which has a shade, or density, greater than 20% opacity (No. 1 of the Ringelmann Chart).

At no time shall the visible air contaminant have a shade, density or appearance greater than 60% opacity (No. 3 of the Ringelmann Chart).

5-221

1. Sulfur Limitation in Fuel

a. No person shall cause or permit the use, purchase, or sale for use in stationary combustion installations within the State of Vermont for heat or power generation, fuels containing more than 2.0% sulfur by weight.

5-251

1. Control of Nitrogen Oxides Emissions

a. No person shall discharge, or cause, allow or permit emissions of oxides of nitrogen, expressed as NO_x, from a new stationary combustion installation with a heat input capacity of 250 million BTU's or more in excess of:

(1) 0.36 grams per million calorie heat input (0.20 pounds per million BTU) derived from gaseous fossil fuel.

(2) 0.54 grams per million calorie heat input (0.30 pounds per million BTU) derived from liquid fossil fuel.

(3) 1.26 grams per million calorie heat input (0.70 pounds per million BTU) derived from solid fossil fuel (except lignite or a fossil fuel containing 25 percent by weight, or more of coal refuse).

2. Control of Sulfur Dioxide Emissions

a. No person shall discharge, or cause, allow or permit emissions of sulfur dioxide from a new stationary combustion installation with a heat input capacity of 250 million BTU's or more in excess of:

(1) 1.4 grams per million calorie heat input (0.80 pounds per million BTU) derived from liquid fossil fuel.

(2) 2.2 grams per million calorie heat input (1.2 pounds per million BTU) derived from solid fossil fuel.

b. This limit shall not apply to gas turbine generators.

4.03 EMISSION TESTING

(a) Emission tests for *existing sources* shall be conducted and reported and data reduced as set forth in this part and the appropriate *reference methods;* if not appropriate, then *equivalent* or *alternative methods* shall be used.

(b) Emission testing for *existing sources* shall be subject to testing guidelines as approved by the *Board.* Procedures may be adjusted or changed by the *Board* to suit specific sampling conditions or needs based upon good practice, judgement and experience. When such tests are adjusted, consideration shall be given to the effect of such change on established *emission standards.* Tests shall be performed under the direction of *persons* whose qualifications are acceptable to the *Board.*

(c) Emission tests for *existing sources* shall be conducted under such conditions as the *Board* shall specify to the *owner* based on representative performance of the *source.* The *owner* shall make available to the *Board* such records as may be necessary to determine the conditions of the emission tests. Operations during periods of *start-up, shutdown and malfunction* shall not constitute representative conditions of emission tests unless otherwise specified in the applicable standard.

(d) An *owner* may request the *Board* to determine the *opacity* of emissions from an *existing source* during the emission tests required by this section.

(e) Each emission test for an *existing source* shall consist of three separate runs using the applicable test method. Each run shall be conducted for the time and under the conditions acceptable to the *Board.* For the purpose of determining compliance with applicable standard the arithmetic means of results of the three runs shall apply. In the event that a sample is accidentally lost or conditions occur in which one of the three runs must be discontinued because of forced *shutdown,* failure of an irreplaceable portion of the sample train, extreme meteorological conditions or other circumstances beyond the *owner's* control, compliance may, upon the approval of the *Board,* be determined using the arthmetic means of the results of the two other runs.

(f) The *Board* may test emissions of air pollutants from any *existing source.* Upon request of the *Board* the *owner* shall provide, or cause to be provided, emission testing facilities as follows:

(1) Sampling ports adequate for test methods applicable to such source.

(2) Safe sampling platform(s).

(3) Safe access to sampling platform(s).

(4) Utilities for sampling and testing equipment.

(g) Upon request of the *Board* the *owner* of any *existing source* subject to the provisions of this part shall conduct emission tests in accordance with procedures approved by the *Board.*

4.04 MONITORING

(a) Unless otherwise approved by the *Board, owners* of *existing sources* specified below shall install, calibrate, maintain and operate systems for continuously monitoring and recording emissions of specified pollutants. However, nothing in this part shall be deemed to exempt any owner from complying with paragraph (f) of this section.

(1) *Fossil fuel-fired steam generators* of greater than 250 million Btu per hour maximum *heat input* with an annual average *capacity factor* of greater than 30 percent (as reported to the Federal Power Commission for calendar year 1974 for utility power plant units, or as otherwise demonstrated to the *Board* by the *owner* for other power plants and industrial units) shall be monitored for *opacity* except where:

(i) Gaseous fuel is the only fuel burned, or

(ii) Oil or a mixture of gas and oil are the only fuels burned and the facility is able to comply with the applicable *particulate* matter and visible *emission standards* without utilization of *particulate* matter collection equipment, and where the facility has never been found, through any administrative or judicial proceedings, to be in violation of any visible *emission standard*.

(2) *Nitric acid plants* of greater than 300 tons per day production capacity (the production capacity being expressed as 100 percent acid) shall be monitored for *nitrogen oxides* emissions.

(3) Sulfuric acid plants of greater than 300 tons per day production capacity (the production capacity being expressed as 100 percent acid) shall be monitored for sulfur dioxide emissions.

(4) Catalyst regenerators for fluid bed catalytic cracking units of greater than 20,000 barrels per day fresh feed capacity at petroleum refineries shall be monitored for *opacity*.

(5) Any facility which is scheduled for retirement within 5 years after the effective date of applicable monitoring requirements contained in Section 4.04 shall be exempt from such requirements provided that adequate evidence and guarantees are provided that clearly show that the facility will cease operation prior to such date.

(b) All *continuous monitoring systems* and *monitoring devices* shall be installed and operational prior January 1, 1979. Verification of operational status shall, as a minimum, consist of the completion of the conditioning period specified by applicable requirements in Appendix B of 40 CFR Part 60.

(c) Within 30 days after the date set forth in paragraph

(b) of this section and at such other times as may be requested by the *Board*, the *owner* of any *existing source* shall conduct *continuous monitoring system* performance evaluations and furnish the *Board* within 60 days thereof two or, upon request, more copies of a written report of the results of such tests.

(d) Unless otherwise approved by the *Board*, all *continuous monitoring systems* required by paragraph (a) of this section shall be installed, calibrated, maintained and operated in accordance with applicable requirements in this section and Sections I and II of Appendix J.

(e) Upon written application by an *owner*, the *Board* may approve alternatives to any monitoring procedures or requirements of this part including, but not limited to, the following:

(1) Alternative monitoring requirements when installation of a *continuous monitoring system* or *monitoring device* specified by this part would not provide accurate measurements due to liquid water or other interferences caused by substances with the effluent gases.

(2) Alternative monitoring requirements when the *source* is infrequently operated.

(3) Alternative monitoring requirements to accommodate *continuous monitoring systems* that require additional measurements to correct for stack moisture conditions.

(4) Alternative locations for installing *continuous monitoring systems* or *monitoring devices* when the *owner* can demonstrate that installation at alternate locations will enable accurate and representative measurements.

(5) Alternative methods of converting pollutant concentration measurements to units of the standards.

(6) Alternative procedures for computing emission averages that do not require integration of data (e.g., some facilities may demonstrate that the variability of their emissions is sufficiently small to allow accurate reduction of data based upon computing averages from equally spaced data points over the averaging period).

(7) Alternative monitoring requirements when the effluent from a single *source* or the combined effluent from two or more *sources* are released to the atmosphere through more than one point.

(8) Alternative procedures for performing calibration checks.

(9) Alternative monitoring requirements when the requirements of this section would impose an extreme economic burden on the *owner*.

(10) Alternative monitoring requirements when the *continuous monitoring systems* cannot be installed due to physical limitations at the *source*.

(11) Alternative *continuous monitoring systems* that do not meet the design or performance requirements in Performance Specification 1 of Appendix B of 40 CFR Part 60, but adequately demonstrate a definite and consistent relationship between its measurements and the measurements of *opacity* by a system complying with the requirements in Performance Specification 1 of Appendix B of 40 CFR Part 60. The *Board* may require that such demonstration be performed for each *source*.

(f) Upon request of the *Board*, the *owner* of an *existing source* subject to the provisions of this part shall install, calibrate, maintain and operate equipment for continuously monitoring and recording emissions and/or process parameters in accordance with methods and procedures acceptable to the *Board*.

4.05 NOTIFICATION, RECORDS AND REPORTING

(1) Any *owner* of an *existing source* subject to the provisions of this part shall furnish the *Board* written notifications as follows:

(1) A notification of the date upon which demonstration of the *continuous monitoring system* performance commences in accordance with Section 4.04(c). Notification shall be postmarked not less than 30 days prior to such date.

(2) A notification of the date of any emission test the *owner* wishes the *Board* to consider in determining compliance with a standard. Notification shall be postmarked not less than 30 days prior to such date.

(b) Any *owner* of an *existing source* subject to the provisions of Section 4.04 (a) shall maintain records of the occurrence and duration of any *startup, shutdown* or *malfunction* in the operation of such *source*; any *malfunction* of the *air pollution* control equipment; or any periods during which a *continuous monitoring system* or *monitoring device* is inoperative.

(c) Each *owner* required to install a *continuous monitoring system* shall submit a written report of *excess emissions* (as defined in Section II of Appendix J) to the *Board* for every calendar quarter. All quarterly reports shall be postmarked by the 30th day following the end of each calendar quarter and shall include the following information:

(1) The magnitude of *excess emissions* computed in accordance with Section I.f of Appendix J, and conversion factor(s) used, and the date and time of commencement and completion of each time period of *excess emissions*.

(2) Specific identification of each period of *excess emissions* that occurs during *startups, shutdowns* and *malfunctions* of the *source*. The nature and cause of any *malfunction* (if known), the corrective action taken or preventative measures adopted.

(3) The date and time identifying each period during which the *continuous monitoring system* was inoperative except for zero and span checks and the nature of the system repairs or adjustments.

(4) When no *excess emissions* have occurred or the *continuous monitoring system(s)* have not been inoperative, repaired or adjusted, such information shall be stated in the report.

(d) Any *owner* of an *existing source* subject to the provisions of this part shall maintain a file of all measurements, including *continuous monitoring system*, *monitoring device*, and emission testing measurements; all *continuous monitoring system* performance evaluations; all *continuous monitoring system* or *monitoring device* calibration checks; adjustments and maintenance performed on these systems or devices; and all other information required by this part recorded in a permanent form suitable for inspection. The file shall be retained for at least 2 years following the date of such measurements, maintenance, reports and records.

(e) Upon request of the *Board*, the *owner* of an *existing source* subject to the provisions of this part shall provide notifications and reports, revise reports, maintain records or report emission test or monitoring results in a manner and form and using procedures acceptable to the *Board*.

EMISSION STANDARDS FOR VISIBLE EMISSIONS — (RULE EX-2)

4.20 EMISSION STANDARDS

(a) No *owner* or other *person* shall cause, suffer, allow or permit the discharge into the outdoor atmosphere from any *source* visible emissions of greater than 20 percent *opacity*.

(b) No *owner* or other *person* shall cause, suffer, allow or permit the discharge of dust, *fumes*, *gases*, *mist*, vapors or any combination thereof from a building or equipment in such a matter and amount as to cause a nuisance or to violate these regulations.

4.21 EXCEPTIONS

(a) When starting a new fire or blowing tubes or cleaning a fire box, an *owner* may discharge into the atmosphere from any *source* visible emissions of greater than 20 percent *opacity* for brief periods.

(b) The limits of Section 4.20 shall not apply when the *opacity* of the visible emission is due to the presence of uncombined water.

4.51 SULFUR OXIDE EMISSIONS AND OTHER GASES AND COMPOUNDS CONTAINING SULFUR

No *owner* or other *person* shall cause, suffer, allow or permit the emission from any *source* operation of sulfur dioxide in an in-*stack* concentration exceeding 2000 ppm by volume except as provided in the following:

(a) *Combustion Installations*

(1) No *owner* or other *person* shall cause, suffer, allow or permit the emission of sulfur dioxide from any *combustion installation* in excess of that expressed by the following equation:

(i) $S = 2.64K$ (AQCR 1 through 6)

(ii) $S = 1.06K$ (AQCR 7)

where:

S = allowable emission of sulfur dioxide expressed in lbs/hrs.

K = *actual heat input at total capacity* expressed in Btu x 10^6 per hr

(b) Sulfuric Acid Plants

(1) The sulfur dioxide in the tail gases from any sulfuric acid *manufacturing operation* shall not exceed a concentration of 2000 parts per million by volume and a mass emission rate of 27 pounds per ton of 100 percent acid produced when elemental sulfur is used for feed material, or 3500 ppm by volume and a mass emission rate of 45 pounds per ton of 100 percent acid produced when other raw materials such as recycled spent acid and ores are used as feed. These emission levels may be exceeded for a period not longer than 24 hours during *start-up*.

(2) All plants shall reduce acid mist emissions to not more than 5.0 mg H2SO4 including uncombined SO3 per standard cubic foot.

(c) Hydrogen Sulfide

No *owner* or other *person* shall cause or permit the continuing emission of any refinery process gas stream or any other process gas stream that contain H2S in concentration greater than 15 grains per 100 cubic feet of gas without burning or removing H2S in excess of this concentration provided that SO2 emissions in the burning operation meet the requirements of Section 4.51.

3.03. Maximum Allowable Emission Rates for Similar Units in All Priority III Regions Except Region IV.

No person shall cause, suffer, allow, or permit the discharge of sulfur dioxide into the open air from all stacks located at one plant, measured in terms of pounds per hour, in excess of the amount determined as follows:

(1) For fuel burning units of the Harrison Power Station of Monongahela Power Company, located in Air Quality Control Region VI, the product of 6.0 and the total actual operating heat inputs for such units discharging from those stacks in million B.T.U.'s per hour.

(2) For fuel burning units of the Rivesville Power Station of Monongahela Power Company, located in Air Quality Control Region VI, the product of 3.2 and the total design heat inputs for such units discharging from those stacks in million B.T.U.'s per hour.

(3) For fuel burning units of the Albright Power Station of Monongahela Power Company, located in Air Quality Control Region VI, the product of 3.2 and the total design heat inputs for such units discharging from those stacks in million B.T.U.'s per hour.

(4) For fuel burning units of the Fort Martin Power Station of Monongahela Power Company, located in Air Quality Control Region VI, the product of 3.1 and the total actual operating heat inputs for such units discharging from those stacks in million B.T.U.'s per hour.

(5) For fuel burning units of the Phillip Sporn Plant of Central Operating Company, located in Air Quality Control Region III, the product of 3.2 and the total design heat inputs for such units discharging from those stacks in million B. T. U.'s per hour.

(6) For Type 'b' and Type 'c' fuel burning units, the product of 3.2 and the total design heat inputs for such units discharging through those stacks in million B. T. U.'s per hour.

3.07. No person shall cause, suffer, allow, or permit the discharge of sulfur dioxide to the open air from the combustion of fuel in a fuel burning unit of a waste heat boiler in excess of 2.2 pounds of sulfur dioxide per million B. T. U.'s of heat input per hour. This limitation is based on the heat input provided to the boiler by the combustion of this auxiliary fuel.

The provision of this Sub-Section applies only to the fuel used for the waste heat boiler(s) and does not replace or supersede the provisions of Sub-Section 3.08.

3.08. Weight Emission Standards for Manufacturing Process Source Operations.

(a) No person shall cause, suffer, allow, or permit the emission into the open air from any source operation an in-stack sulfur dioxide concentration exceeding 2,000 parts per million by volume from existing source operations, except as provided in Sub-Sections (b), (c), (d), (e), and (f) following.

(b) No person shall cause, suffer, allow, or permit sulfur dioxide tail gas emissions from sulfuric acid manufacturing plants to exceed the following:

(1) For plants using elemental sulfur as a feed stock, 30 pounds per ton of acid produced.

(2) For plants using other materials as a feed stock, 40 pounds per ton of acid produced.

(c) No person shall cause, suffer, allow, or permit the emission of sulfur oxides, calculated as sulfur dioxide, from a sulfur recovery plant to exceed 0.06 pounds per pound of sulfur processed.

(d) No person shall cause, suffer, allow, or permit the combustion of any refinery process gas stream or any other process gas stream that contains hydrogen sulfide in a concentration greater than 50 grains per 100 cubic feet of gas. In certain cases very small units may be considered exempt from this requirement if, in the opinion of the Commission, compliance would be economically unreasonable and if the contribution of the unit to the surrounding air quality could be considered negligible.

(e) No person shall cause, suffer, allow, or permit the emission of sulfur oxides, calculated as sulfur dioxide, from primary non-ferrous smelters to exceed that determined by the following equations:

Copper Smelters: $Y = 0.2X$

Zinc Smelters: $Y = 0.564\,X^{0.85}$

Lead Smelters: $Y = 0.98\,X^{0.77}$

Where X is the total sulfur fed to the smelter in pounds per hour, and Y is the allowable sulfur dioxide emissions in pounds per hour.

(f) No person shall cause, suffer, allow, or permit the total sulfite pulp mill emissions of sulfur oxides, calculated as sulfur dioxide, from operations such as blow pits, washer vents, storage tanks, digester relief, and recovery system, to exceed 9.0 pounds per air-dried ton of pulp produced.

WEST VIRGINIA

SERIES III - SECTION 2

2.01. No person shall cause, suffer, allow or permit emission of smoke into the open air from any fuel burning equipment which is as dark or darker in shade or appearance as that designated as No. 1 on the Ringelmann Smoke Chart.

2.02. The provisions of Sub-Section 2.01 of this Section shall not apply to smoke emitted during the starting operation the shade or appearance of which is less than No. 3 of the Ringelmann Smoke Chart for a period or periods aggregating no more than 4 minutes per start-up.

SERIES VI - SECTION 4

4.02. Emission of Visible Particulate Matter

No person shall cause, suffer, allow or permit emission of smoke into the atmosphere from any incinerator which is as dark or darker in shade or appearance than that designated as No. 1 on the Ringelmann Smoke Chart or the equivalent opacity of this Ringelmann number.

4.03. The provisions of Sub-Section 4.02 shall not apply to smoke, the shade or appearance of which is less than No. 2 on the Ringelmann Smoke Chart or the equivalent opacity of this Ringelmann number, for a period or periods aggregating no more than eight (8) minutes per start-up, or six (6) minutes in any 60-minute period for stoking operations.

2.01. No person shall cause, suffer, allow or permit emission of smoke into the open air from any stack which is as dark or darker in shade or appearance as that designated as No. 1 on the Ringelmann Smoke Chart.

2.02. The provisions of Sub-Section 2.01 of this Section shall not apply to smoke, the shade or appearance of which is less than No. 3 on the Ringelmann Smoke Chart for a period or periods aggregating no more than 5 minutes in any 60-minute period during operation.

2.03. The provisions of Sub-Section 2.01 and 2.02 of this Section shall not apply to smoke, the shade or appearance of which is less than No. 3 on the Ringelmann Smoke Chart for a period of up to 8 minutes in any operating day for the purposes of building a fire of operating quality in the fuel burning equipment of a thermal drier.

2.04. The equivalent opacity of those Ringelmann numbers in Sub-Section 2.01 and Sub-Section 2.02 of this Section shall be used as a guide in the enforcement of Section 3 and Section 4 of this Regulation.

2.05. No person shall cause, suffer, allow or permit emission of smoke into the open air from any fugitive dust control system which is as dark or darker in shade or appearance as that designated as No. 1 on the Ringelmann Smoke Chart or the equivalent opacity of this Ringelmann number.

(6) Visible emissions. No person shall cause, suffer, allow, or permit emissions into the ambient air from any direct or portable source in excess of one of the following limitations: Where the presence of uncombined water is the only reason for failure to meet the requirements of this subsection, such failure shall not be a violation of this section.

(a) All direct and portable sources on which construction or modification is commenced after April 1, 1972 shall meet the emission limits of this paragraph. In addition, all direct and portable sources located in subregion 1 of the Lake Michigan Intrastate AQCR or in the Southeast Wisconsin Intrastate AQCR on which construction or modification was commenced on or before April 1, 1972 shall, by July 31, 1975, meet the emission limits of this paragraph.

1. Direct or portable sources other than those specified in (6) (a) 2. of this section; emissions of shade or density greater than number 1 of the Ringelmann chart or 20 percent opacity with the following exceptions:

a. When combustion equipment is being cleaned or a new fire started, emissions not to exceed number 4 of the Ringelmann chart or 80 % opacity for 5 minutes in any one hour. Combustion equipment may not be cleaned nor a fire started more than 3 times per day.

b. For stated periods of time, as permitted by the department, for such purpose as operating test, use of emergency or reserve equipment, or other good cause, provided no hazard or unsafe condition arises.

c. For direct or portable sources in operation on or before February 1, 1975, where performance test data taken concurrently with Ringelmann or opacity readings show the source to be in compliance with the emission limits but not the Ringelmann or opacity limits. In this case, Ringelmann or opacity limits shall be set at 0.5 Ringelmann or 10 % opacity above the average read during the stack test.

2. Direct or portable sources specified hereunder on which construction or modification is commenced after February 1, 1975; emissions of shade or density greater than:

a. Asphalt concrete plants (any combination of the following: dryers; systems for screening, storing, and weighing hot aggregate; systems for loading, transferring, and storing mineral filler; systems for mixing asphalt concrete; and the loading, transfer, and storage systems associated with emission control systems): 20 percent opacity.

b. Petroleum refineries (fluid catalytic cracking unit catalyst regenerators and fluid catalytic cracking unit incinerator-waste heat boilers): 30 percent opacity, except for 3 minutes in any one hour.

c. Secondary lead smelters:

i. Blast or cupola furnaces and reverberatory furnaces: 20 percent opacity.

ii. Pot furnaces of more than 550 pounds (250 kilograms) charging capacity: 10 percent opacity.

d. Secondary brass and bronze ingot production plants:

i. Reverberatory furnaces of 2,205 pounds per hour (1,000 kilograms per hour) or greater production capacity: 20% opacity.

ii. Electric furnaces of 2,205 pounds per hour (1,000 kilograms per hour) or greater production capacity and blast or cupola furnaces of 550 pounds per hour (250 kilograms per hour) or greater production capacity: 10% opacity.

e. Sewage treatment plants (sewage sludge and grit incinerators): 20 percent opacity.

(b) All direct and portable sources on which construction or modification was commenced on or before April 1, 1972 shall meet the emission limits of this paragraph. Direct and portable sources located in subregion 1 of the Lake Michigan Intrastate AQCR or in the Southeast Wisconsin Intrastate AQCR shall also meet the requirements of subsection (6) (a) of this section.

1. All direct or portable sources; emissions of shade or density equal to or greater than number 2 of the Ringelmann chart or 40% opacity. Exceptions listed in (6) (a) 1. of this section shall apply.

NR 154.12 Control of sulfur emissions. (1) GENERAL LIMITATIONS. No person shall cause, suffer, allow, or permit emission of sulfur or sulfur compounds into the ambient air which substantially contribute to the exceeding of an air standard or cause air pollution. The limitation on sulfur content of stand-by fuel is specified in section NR 154.16 and the limitation on total reduced sulfur from pulping operations is specified in section NR 154.18 (2).

(2) SULFUR LIMITATIONS. No person shall cause, suffer, allow, or permit sulfur dioxide to be emitted to the ambient air in amounts greater than:

(a) New or modified fossil fuel-fired steam generators rated at over 250 million BTU per hour:

1. Firing of liquid fossil fuel: 0.80 pounds of SO_2 per million BTU input.

2. Firing of solid fossil fuel: 1.2 pounds of SO_2 per million BTU input.

(b) New or modified sulfuric acid plants other than those utilized primarily as a means of preventing emission to the ambient air of sulfur dioxide or other sulfur compounds: 4.0 pounds of SO_2 per ton of acid produced.

(c) In the Southeast Wisconsin Intrastate AQCR installations of 250 million BTU per hour or less (heat input of an installation shall follow ASME standard number APS-1) in addition to meeting the emission limits of section NR 154.11 (4), Wis. Adm. Code, shall not burn coal with a sulphur content exceeding 1.11 pounds per million BTU in the coal.

(3) PETROLEUM REFINERIES. No person shall cause, suffer, allow or permit the release into the atmosphere or the burning of any fuel gas in an incinerator-waste heat boiler or process heater which contains greater than 0.10 grains of hydrogen sulfide (H_2S) per dry cubic foot at standard conditions (0.23 grams per dry cubic meter at standard conditions) unless the gases resulting from combustion are treated in a manner which prevents the release of sulfur dioxide to the atmosphere as effectively as controlling the concentration of H_2S in the fuel gas being burned.

NR 154.15 Control of nitrogen compound emissions. (1) GENERAL LIMITATIONS. No person shall cause, suffer, allow, or permit nitrogen oxides or nitrogen compounds to be emitted to the ambient air which substantially contribute to the exceeding of an air standard or cause air pollution.

(2) NITROGEN OXIDES LIMITATIONS. No person shall cause, suffer, allow, or permit nitrogen oxides (expressed as NO_2) to be emitted to the ambient air in amounts greater than:

(a) New or modified fossil fuel-fired steam generators rated at over 250 million BTU per hour:

1. Firing of gaseous fossil fuel; 0.20 pounds of NO_2 per million BTU input.

2. Firing of liquid fossil fuel: 0.30 pounds of NO_2 per million BTU input.

3. Firing of solid fossil fuel: 0.70 pounds of NO_2 per million BTU input.

(b) New or modified weak nitric acid plants (acid 30 to 70% in strength:) 3.0 pounds of NO_2 per ton of acid produced.

(4) VISIBLE EMISSION LIMITS FOR MOTOR VEHICLES, INTERNAL COMBUSTION ENGINES, AND MOBILE SOURCES. No person shall cause, suffer, allow, or permit visible emissions in amounts greater than the following limitations, except when uncombined water is the cause for violation.

(a) Gasoline-powered internal combustion engines of 25 HP or more, or gasoline-powered motor vehicles: no visible emissions for longer than 5 consecutive seconds.

(d) Ships, locomotives, or semistationary diesel engines: emissions of shade or density greater than number 2 on the Ringelmann chart or 40% opacity for longer than an aggregate time of 5 minutes in any 30-minute period. At no time shall emissions exceed a shade or density greater than number 4 on the Ringelmann chart or 80% opacity.

(2) TOTAL REDUCED SULFUR LIMITATIONS. No person shall cause, suffer, allow, or permit emission into the ambient air of total reduced sulfur (TRS) in excess of the following limitations: all emission standards in this section are based on average daily emissions.

(a) The emission of TRS from all recovery furnace stacks shall not exceed one-half pound of sulfur (as sulfur) per equivalent ton of air-dried kraft pulp, or from each recovery furnace stack 17 and one-half ppm, expressed as hydrogen sulfide on a dry gas basis, whichever is the more restrictive. New direct sources shall meet such other limit of TRS that proves to be reasonably attainable utilizing the latest in design of recovery furnace equipment, controls, and procedures. All direct sources shall be in compliance with this requirement by not later than July, 1976.

(b) Noncondensibles from digesters and multiple-effect evaporators shall be treated to reduce the emission of TRS equal to the reduction achieved by thermal oxidation in a lime kiln. All existing direct sources shall be in compliance with this requirement by not later than July, 1973.

(c) No extensions beyond these time limits for implementation may be granted without formal application to the department which determines adequate justification.

b. Any existing facility producing sulfuric acid by the contact process by burning elemental sulfur, alkylation acid, hydrogen sulfide, organic sulfides, mercaptans, or acid sludge shall limit the atmospheric discharge of sulfur dioxide in the effluent to not more than 2,000 ppm--maximum 2 hour average.

c. Any new facility producing sulfuric acid by the contact process by burning elemental sulfur, alkylation acid, hydrogen sulfide, organic sulfides, mercaptans, or acid sludge shall limit the atmospheric discharge of sulfur dioxide in the effluent to not more than four pounds per ton of acid produced (2 kgm per metric ton),--maximum 2 hour average.

d. The emission of sulfur dioxide (SO_2) from fuel burning equipment, the construction of which commences after January 1, 1974, shall be limited to the values shown in Table 4a.

e. The emission of sulfur dioxide (SO_2) from fuel burning equipment, the construction of which commenced prior to January 1, 1974, shall be limited to the values shown in Table 4b.

f. For purposes of Section 4 d and 4 e of these regulations, the heat input shall be the aggregate heat content of all fuels whose products of combustion pass through a stack or stacks or the heat input value used shall be the equipment manufacturer's or designer's guaranteed maximum input, whichever is greater.

g. For purposes of Section 4d and 4e of these regulations, the SO_2 emission rate shall be determined by a source test method approved by the Division and shall be consistent with test method 6, Appendix A, Part 60 of Title 40 Code of Federal Regulations.

Table 4a.

Fuel	Allowable SO_2 emission rate(1) (maximum 2 hr. average)
Coal	0.2 lb/10^6 BTU heat input
Oil	0.8 lb/10^6 BTU heat input

(1) Applicable to individual fuel burning equipment units with a heat input of 250 X 10^6 BTU/HR or greater

Table 4b.

	Allowable SO_2 Emission Rate(2) (Maximum 2 Hr. Average)		
Fuel	Heat Input Between $250X10^6$ BTU/Hr and $2500X10^6$ BTU/Hr.	Heat Input Between $2500X10^6$ BTU/Hr. and $5000X10^6$ BTU/Hr.	Heat Input Greater Than $5000X10^6$ BTU/Hr.
Coal	1.2 Lb/10^6 BTU Heat Input	0.5 Lb/10^6 BTU Heat Input	0.3 Lb/10^6 BTU Heat Input

(2) Applicable to individual fuel burning equipment units with the noted heat input values

Section 5. Sulfuric acid mist.

a. Any existing facility producing sulfuric acid by the contact process by burning elemental sulfur, alkylation acid, hydrogen sulfide, organic sulfides, mercaptans, or acid sludge shall limit the atmospheric discharge of acid mist in the effluent to not more than 0.50 pounds per ton of acid produced (0.25 kgm per metric ton),--maximum 2 hour average, expressed as H_2SO_4.

b. The emission standards for nitrogen oxides, measured by the method described in Appendix, Method 7, Federal Register, Volume 36, No. 159, August 17, 1971, or by an equivalent method are:

(1) The emission of nitrogen oxides from new gas fired fuel burning equipment calculated as nitrogen dioxide shall be limited to 0.20 pound per million BTU (0.36 grams per million gram calories) of heat input.

(2) The emission of nitrogen oxides from existing gas fired fuel burning equipment calculated as nitrogen dioxide shall be limited to 0.23 pound per million BTU (0.41 grams per million gram calories) of heat input.

(3) The emission of nitrogen oxides from new oil fired fuel burning equipment calculated as nitrogen dioxide shall be limited to 0.30 pounds per million BTU (0.54 grams per million gram calories) of heat input for units having a heat input of 1.0 million BTU per hour (250 million gram calories/hour) or greater and 0.60 pounds per million BTU (1.08 grams per million gram calorie of heat input for units having a heat input less than 1.0 million BTU per hour (250 million gram calories/hour).

SECTION 10

(4) The emission of nitrogen oxides from existing oil fired fuel burning equipment calculated as nitrogen dioxide shall be limited to 0.46 pound per million BTU (0.83 grams per million gram calories) of heat input for units having a heat input of 250 million BTU per hour (62.5 gram calories/hour) or greater and 0.60 pound per million BTU (1.08 grams per million gram calories) of heat input for units having a heat input less than 250 million BTU per hour (62.5 billion gram calories/hour).

(5) The emission of nitrogen oxides from new nitric acid manufacturing plants, calculated as nitrogen dioxide shall be limited to 3 pounds per ton (1.5 kilograms per metric ton) of acid produced, maximum 2 hour average.

(6) The emission of nitrogen oxides from existing nitric acid manufacturing plants, calculated as nitrogen dioxide shall be limited to 5.5 pounds per ton (2.8 kilograms per metric ton) of acid produced, maximum 2 hour average.

(7) The emission of nitrogen oxides from new solid fossil fuel (except lignite) fired equipment calculated as nitrogen dioxide shall be limited to 0.70 pounds per million BTU (1.26 grams per million gram calories) heat input.

(8) The emission of nitrogen oxides from existing solid fossil fuel (except lignite) fired equipment calculated as nitrogen dioxide shall be limited to 0.75 pounds per million BTU (1.35 grams per million gram calories) heat input.

c. The requirements of this section shall not apply to internal combustion engines having a heat input of less than 200 million BTU per hour.

Section 14. Control of particulate emissions.

a. Visible emissions of any contaminant discharged into the atmosphere from any single new source of emission whatsoever as determined by a qualified observer shall be limited to 20 percent opacity.

b. Visible emissions of any contaminant discharged into the atmosphere from any single existing source of emission whatsoever as determined by a qualified observer shall be limited to 40 percent opacity. This limitation shall not apply to existing incinerators.

d. The emission of visible air pollutants from diesel engines as determined by a qualified observer shall be limited to 30 percent opacity below 7500 feet elevation except for periods not exceeding ten consecutive seconds. This limitation shall not apply during a reasonable period of warmup following a cold start or where undergoing repairs and adjustment following a malfunction.

e. Any single source may discharge for a period or periods aggregating not more than 6 minutes in any hour contaminants;

(1) Having an equivalent opacity of not more than 40 percent as determined by a qualified observer.

SECTION 14

h. The emissions of particulate matter from existing sources where fuel burning equipment is used for indirect heating shall be limited as shown in Figure 1 and shall be applicable to equipment burning solid fuel. The emissions of particulate matter from new sources where fuel burning equipment is used for indirect heating shall be limited to 0.10 pound per million BTU input (0.18 grams per million calories) maximum 2 hour average. The visible emissions of particulate matter from new sources where fuel burning equipment is used for indirect heating shall be no greater than 20 percent opacity, except that 40 percent opacity shall be permitted for not more than 2 minutes in any hour.

i. The emission of particulate matter from any incinerator shall be limited to:

(1) 0.20 pound per 100 pounds (2 grams per kilogram) of refuse charged as determined by a source test method approved by the Division for stationary sources as described in Subsection g. (4) of this regulation;

(2) A shade or density equal to but not greater than 20 percent opacity as determined by a qualified observer.

Section 15. Wood waste burners.

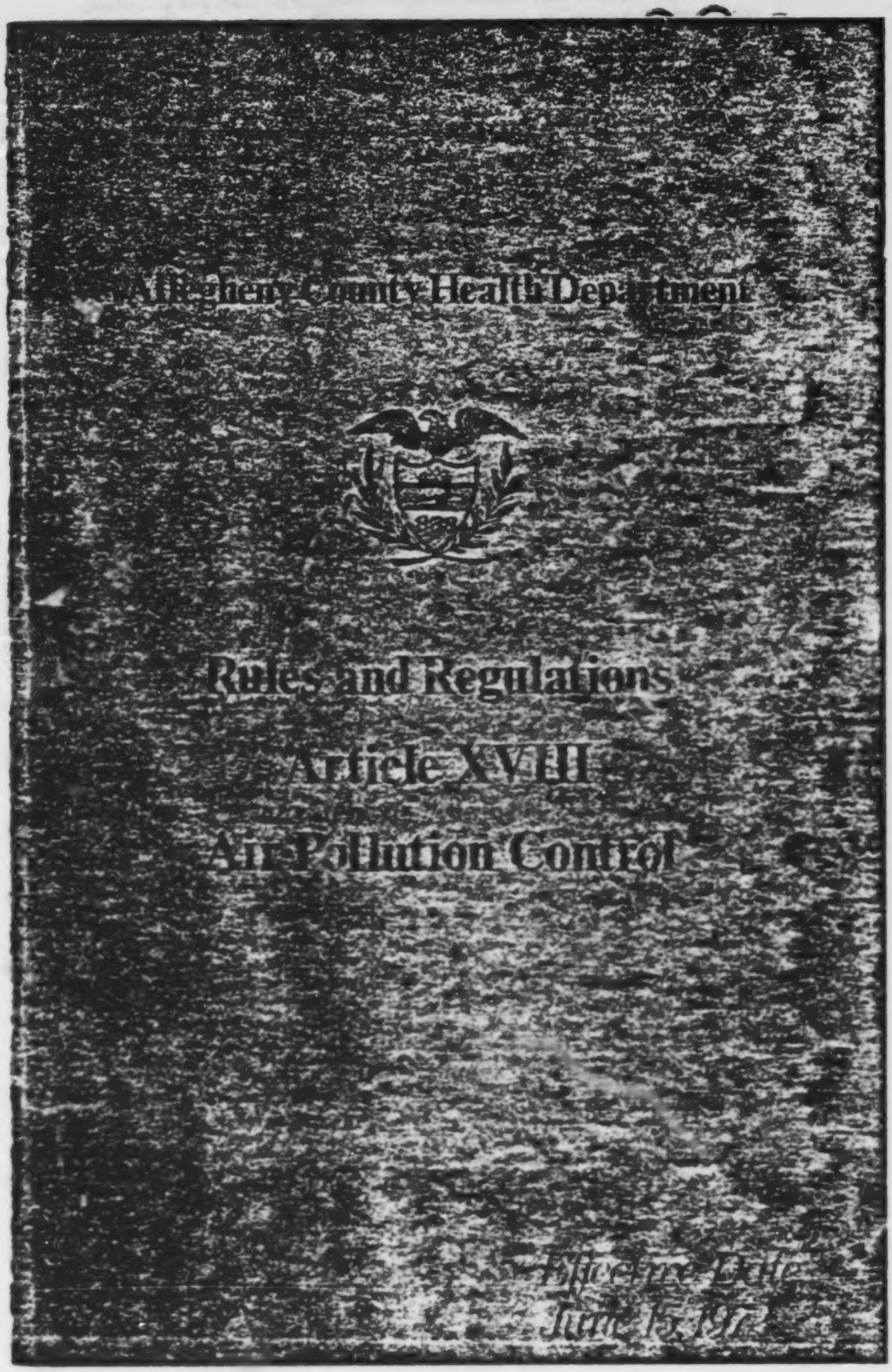
a. Emissions of any air contaminant from any wood waste burner discharged into the atmosphere for a period or periods aggregating more than 6 minutes in any one hour shall not exceed:

(1) An opacity of 20 percent as determined by a qualified observer.

c. During startup and building of fires, in wood waste burners, the particulate, opacity, and darkness limits specified in this regulation may be exceeded for not more than 60 minutes in eight hours. Materials prohibited in Subsection b. (3) shall not be used for startup and building of fires in wood waste burners.

APPENDIX C

EXCERPTS OF RELEVANT LOCAL REGULATIONS



Allegheny County Health Department

Rules and Regulations

Article XVIII

Air Pollution Control

Effective Date
June 15, 1972

B. The Director may inspect the above described premises and all devices, contrivances, processes, or operations thereon; and the records, charts, readings, and data associated with such processes or operations thereon relevant to the emission of air contaminants.

.2 No person shall in any manner hinder, obstruct, delay, resist, prevent, or in any way interfere or attempt to interfere with the Director in the performance of any duty herein enjoined, or after proper identification, refuse him entrance to any premise, building, or other place, except a building designed for and used exclusively as a private residence.

1809. **EMISSION STANDARDS** The following emission standards are applicable to all sources of air contaminants now existing or which come into existance after the effective date of this Article.

.1 **Visible Air Contaminants**

A. No person shall cause, suffer, or allow the emission into the open air of visible air contaminants in such a manner that the opacity of the emission is:

1. Equal to or greater than No. 1 on the Ringelmann Scale or an equivalent opacity for a period or periods aggregating more than three (3) minutes in any one (1) hour, or

2. Equal to or greater than No. 3 on the Ringelmann Scale or an equivalent opacity at any time.

B. The standards of Subsection .1A. shall not apply to any visible air contaminants when:

1. The presence of uncombined water is the only reason for failure of the emission to meet the visible air contaminants standards, or

2. Visible emissions result from a blast furnace slip, as provided in Section 1810.5, or

3. Visible emissions result solely from the operation of a-coke oven or battery of coke ovens as provided in Section 1809.7, or

4. Visible emissions result solely from fugitive emissions excepted from the provisions of Section 1809.2, or

5. Visible emissions result from the operation of an incinerator, as provided in Section 1809.5, or

6. Visible emissions result solely from the cold start of fuel-burning or combustion equipment and when notice has been given as provided in Section 1816.

C. The opacity of visible air contaminants may be measured using:

1. Any device approved by the Director, or

2. Observers trained and qualified to measure opacity with the naked eye or with the aid of any device approved by the Director.

In measuring the opacity of visible air contaminants for the purpose of determining a violation of Subsection .1A., opacity may be measured at the densest point of an emission.

.2 **Fugitive Emissions**

A. No person shall cause, suffer, or allow the emission into the open air of any fugitive air contaminant from any source except from:

1. Construction or demolition of buildings or structures

2. Grading, paving and maintenance of roads and streets

3. Use of roads and streets. Emissions from material in or on trucks, railroad cars, and other vehicular equipment shall not be considered as emissions from use of roads and streets.

4. Clearing of land

5. Tilling or applying amendments to the soil, preparing cover crops for incorporation into the soil and harvesting, while farming

6. Stockpiling of materials

7. Blasting in open pit mines. Emissions from drilling shall not be considered as emissions from blasting.

8. Sources for which specific emission standards or standards of performance are set forth in this Article

9. Other sources and classes of sources determined by the Director to be of minor significance with respect to causing air pollution

B. The Director may order any person responsible for any source of fugitive air contaminants listed in items 1. through 9. of Subsection .2A. to take all reasonable actions to prevent fugitive air contaminants from becoming airborne. Such actions may include, but are not limited to the following:

1. Use, where possible, of water or chemicals for control of dust in the demolition of buildings or structures, construction operations, the grading of roads, or the clearing of land

2. Application of asphalt, oil, water, or suitable chemicals on dirt roads, material stockpiles, and other surfaces which can give rise to airborne dusts

3. Conduct of agricultural practices such as tilling of land, application of fertilizers, etc., in such manner as to minimize dust from becoming air-borne

4. The paving and maintenance of roadways

5. The prompt removal of earth or other material from paved streets onto which earth or other material has been transported by trucking or earth moving equipment, erosion by water, or other means

6. Enclosure of the source of fugitive air contaminants

7. The proper hooding, venting, and collecting of fugitive air contaminants

.3 Fuel-Burning or Combustion Equipment For the purpose of this Subsection only, if more than one fuel-burning or combustion sources are connected to a common flue discharging into the open air, such groups of sources shall be considered as one source, and the allowable emissions shall be determined on the basis of the total heat input.

A. Particulate Matter No person shall cause, suffer, or allow the emission into the open air of particulate matter at any time from any fuel-burning or combustion equipment in excess of:

1. The rate of 0.4 lb. per million BTU of heat input, when the heat input to the fuel-burning or combustion equipment in millions of BTUs per hour is greater than 0.2 but less than 50, or

2. The rate determined by the formula:

$$A = 3.6E^{-0.56}$$

where:

A = allowable emission in lb. per million BTU of heat input, and

E = heat input to the fuel-burning or combustion equipment in millions of BTUs per hour, when E is equal to or greater than 50 but less than 850, or

3. The rate of 0.08 lb. per million BTU of heat input, when the heat input to the fuel-burning or combustion equipment in millions of BTUs per hour is equal to or greater than 850.

B. Sulfur Oxides No person shall cause, suffer, or allow the emission into the open air of sulfur oxides, expressed as SO_2, from any fuel-burning or combustion equipment at any time in excess of:

1. The rate of 1.0 lb. per million BTU of heat input, when the heat input to the fuel-burning or combustion unit in millions of BTUs per hour

is greater than 0.2 but less than 50, or

2. The rate determined by the formula:

$$A = 1.7E^{-0.14}$$

where:

A = allowable emission in lb. per million BTU of heat input, and

E = heat input to the fuel-burning or combustion equipment in millions of BTUs per hour, when E is equal to or greater than 50 but less than 2,000, or

3. The rate of 0.6 lb. per million BTU of heat input, when the heat input to the fuel-burning or combustion equipment in millions of BTUs per hour is equal to or greater than 2,000.

.4 **Processes** This Subsection shall apply to all processes except fuel-burning or combustion equipment and incinerators.

A. No person shall cause, suffer, or allow the emission into the open air of particulate matter from any process listed in Table I, at any time, in excess of the rate determined by the following formula:

$$A = 0.76E^{+0.42}$$

where:

A = allowable emissions in lbs./hr., and

E = emission index = F x W lbs./hr.,

where:

F = process factor in lbs./unit, and

W = production of charging rate in units/hr.

The factor F shall be obtained from Table I. The units for F and W shall be compatible.

B. No person shall cause, suffer, or allow the emission into the open air from any process not listed in Table I, in excess of seven (7) pounds of particulate air contaminant in any one-hour period or in excess of a total of one hundred (100) pounds of particulate air contaminants in any 24-hour period, except that no person shall be required to reduce such emission into the open air to a greater degree than ninety-nine (99) percent.

TABLE I

Process	Process Factor, F
1. Carbon black mfg.	500 lbs./ton of product
2. Charcoal mfg.	400 lbs./ton of product
3. Crushing or grinding or screening system	20 lbs./ton of feed
4. Paint mfg.	0.05 lbs./ton of pigment handled
5. Phosphoric acid mfg.	6 lbs./ton of phosphorous burned
6. Detergent drying	30 lbs./ton of product
7. Ammonium nitrate mfg.	
Prilling tower or other granulator	0.1 lbs./ton of product
8. Ferroalloy production furnace	0.3 lbs./ton of product
9. Primary iron and/or steel making:	
Iron production	100 lbs./ton of product
Sintering: windbox	20 lbs./ton of dry solids feed
Steel production	40 lbs./ton of product
Scarfing	20 lbs./ton of product
10. Primary lead production:	
Roasting	0.004 lbs./ton of ore feed
Sintering: windbox	0.2 lbs./ton of product
Lead reduction	0.5 lbs./ton of product

TABLE II

Rated Capacity, Tons/Hour	Emission, Pounds/Hour
4	10
8	15
12	20
16	27
24	33
32	40
40	48

Apply linear interpolation between steps given.

E. For the purpose of Subsection .5, the rated capacity is defined as the amount of combustible material charged into the incinerator of which 95 percent will burn to gas.

F. All incinerators shall be constructed so that afterburning shall be for a residence time of 0.5 second at a temperature of:

1. 1400° Fahrenheit for putrescible and non-chemical refuse.

2. A minimum of 250° Fahrenheit above the auto-ignition temperature of any chemical refuse.

G. No person shall cause, suffer, or allow emission into the open air of visible air contaminants from incinerators in such a manner that the opacity of the emission is equal to or greater than No. 1 on the Ringelmann Scale or an equivalent opacity.

.6 Sulfur Compound Emissions

A. General Subsection 1809.6A. shall apply to all sources, except those subject to the provisions of other sections and subsections of this Article dealing with the control of sulfur compound emissions.

No person shall cause, suffer, or allow the emission into the open air of sulfur oxides from any source in such a manner that the concentration, at any time, of the sulfur oxides, expressed as SO_2, in the effluent gas exceeds 500 parts per million (dry basis).

B. By-product Coke-oven Gas

1. No person shall cause, suffer, or allow the emission of by-product coke-oven gas into the open air unless such gas is first burned.

2. No person shall cause, suffer, or allow the flaring, mixing, or combustion of by-product coke-oven gas containing hydrogen sulfide (H_2S), or the concentration of sulfur compounds measured as H_2S, in the gas in excess of:

(1) 50 grains per hundred dry standard cubic feet for by-product coke plants producing 70 million standard cubic feet or more of coke-oven gas per day, or

(2) The rate determined by the formula:

$$A = 156E^{-0.27}$$

for plants producing 70 million standard cubic feet or less of coke-oven gas per day but 20 million standard cubic feet or more of coke-oven gas per day,

where:

A = allowable H_2S content in grains per hundred dry standard cubic feet of coke-oven gas, and

E = millions of cubic feet of coke-oven gas produced per day, or

(3) 70 grains per hundred dry standard cubic feet of coke-oven gas for by-product coke plants producing less than 20 million standard cubic feet of coke-oven gas per day.

Included in the permitted grains of H_2S is tail-gas sulfur, expressed as equivalent H_2S, emitted into the open air from sulfur removal equipment.

.7 Coke Ovens

A. No person shall cause, suffer, or allow the emission into the open air of visible air contaminants from the pushing and charging of a battery of coke ovens in such a manner that the opacity of the emissions is equal to or greater than No. 2 on the Ringelmann Scale or equivalent opacity.

B. No person shall cause, suffer, or allow the emission into the open air of visible air contaminants from the pushing and charging of a battery of coke-ovens after January 1, 1974 in such a manner that the opacity of the emissions is equal to or greater than No. 1 on the Ringelmann Scale or equivalent opacity.

C. No person shall cause, suffer, or allow the emission of any visible air contaminants into the open air from any opening on the top side of a battery of coke ovens, except for periods when a battery of coke ovens is being charged.

D. No person shall cause, suffer, or allow any visible emission, except non-smoking flame, from any opening from more than ten (10) percent of the coke ovens in any battery at any time except as provided in the preceding paragraph.

E. Self-sealing oven doors found to be leaking thirty (30) minutes or more after an oven is charged shall be adjusted, repaired, or replaced prior to the next coking cycle which starts during the daylight turn after the leak is discovered. Leaking luted doors shall be reluted immediately.

F. No persons shall cause, suffer, or allow the operation of a coke quenching tower which is not equipped with interior baffles.

G. No person shall cause, suffer, or allow the quenching of coke where the water used for such quenching is not equivalent to the quality of water established for the nearest stream or river by regulations of the Department of Environmental Resources, promulgated under the provisions of the Pennsylvania Clean Streams Law, Act of June 22, 1937, P.L. 1987; as amended May 8, 1945, P.L. 435; August 23, 1965, P.L. 372; and July 31, 1970, P.L. 222, except that water from the nearest stream or river may be used for the quenching of coke.

.8 Odor Emissions

A. No person shall cause, suffer, or allow the emission into the open air of odorous matter from any source or process listed in Table III of this section in such manner as to have the effect of being perceptible beyond such person's property.

B. Omissions from any of the sources or processes listed in Table IV of this section must be incinerated in conformity with Subsection 1809.5F. of this Article, except that techniques other than incineration may be used to comply with this section if it is shown to the satisfaction of the Director that such techniques are equivalent to or better than the required incineration in terms of control of odorous matter.

TABLE III

1. Propagation, stockage and processing of animals or animal matter
2. Combustion including combustion of waste
3. Food and beverage processing
4. Manufacture, storage and application of paint, lacquer, varnish and commercial solvents
5. Manufacture and storage of chemicals
6. Manufacture and processing of plastics or rubber
7. Manufacture of asphalt and asphalt products
8. Surface coating and treating processes
9. Smelting and debonding
10. Core making in foundries

2. No person shall cause, suffer, or allow the loading of any volatile organic compound into any vehicular tank, rated at more than 200 gallons, from any loading facility which loads 20,000 gallons or more in any one day, unless such loading facility is equipped with a loading arm with a vapor collection adaptor and pneumatic, hydraulic, or other mechanical means to enforce a vapor-tight seal between the adaptor and the hatch of the tank. A means shall be provided to prevent liquid organic compound drainage from the loading device when it is not connected to the hatch, or to accomplish complete draining before such removal. When loading is effected through means other than hatches all loading and vapor lines shall be equipped with fittings which make vapor-tight connections and which close automatically when disconnected.

C. Volatile Organic Compound Water Separators No person shall cause, suffer, or allow the use of any compartment of any single- or multiple-compartment volatile organic compound water separator, which compartment receives effluent water containing 200 gallons or more a day of any volatile organic compound from any equipment which processes, refines, treats, stores, or handles volatile organic compounds consisting of kerosene or more volatile organic materials, unless such compartment is equipped with one of the following vapor loss control devices, properly installed, in good working order, and in operation:

1. A container having all openings sealed and totally enclosing the liquid contents. All gauging and sampling devices shall be gas-tight, except when gauging or sampling is taking place.

2. A container equipped with a floating roof such as a pontoon type roof, double-deck type roof, or internal floating cover, which will rest on the surface of the contents and be equipped with a closure seal or seals to close the space between the roof edge and container wall. All gauging and sampling devices shall be gas-tight, except when gauging or sampling is taking place.

D. Pumps and Compressors for Volatile Organic Compounds All pumps and compressors handling volatile organic compounds shall have mechanical seals.

E. Ethylene Production Plants No person shall cause, suffer, or allow the emission into the open air of any waste gas stream from any ethylene production plant or facility, unless the gas stream is properly incinerated in conformity with Subsection 1809.5F., except that no person shall cause, suffer, or allow the emission of hydrocarbon gases into the open air from any vapor blowdown or other exhaust system unless such gases are burned by smokeless flares or otherwise disposed of to the satisfaction of the Director.

F. Compliance Techniques Techniques other than those specified in the foregoing five Subsections may be used to comply with the requirements of these Subsections, if it is shown to the satisfaction of the Director that such alternate techniques are equivalent to or better than those specified in these Subsections in terms of the control of organic compounds.

G. Unsaturated Organic Compound Emissions The emission standards as specified in Section 1809 shall also apply to the emission of any unsaturated organic material herein defined, for the purpose of this Subsection, as unsaturated chemical compounds of carbon which exist as gas at standard conditions.

.2 Sulfuric Acid Plants

A. No person shall cause, suffer, or allow the emission into the open air, at any time, from any sulfuric acid production plant or facility, of sulfur oxides, expressed as SO_2, in excess of the rate of 6.5 lbs. per ton of acid produced.

B. No person shall cause, suffer, or allow the emission into the open air, at any time, from any sulfuric acid production plant or facility, of sulfuric acid mist, in excess of the rate of 0.5 lbs. per ton of acid produced, the production being expressed as 100 percent H_2SO_4.

.3 **Sulfur Recovery Plants** No person shall cause, suffer, or allow the emission into the open air, at any time, from any plant used for recovering elemental sulfur from gases containing sulfur compounds, of sulfur compounds, expressed as SO_2, in excess of the rate determined by the formula:

$$A = 0.32E^{-0.5}$$

where:

A = allowable emissions in pounds of sulfur oxides per pound of sulfur compounds, expressed as S, in the feed gases, and

E = recovery plant rating in long tons of sulfur per day.

.4 **Exceptions to Standards for Sulfuric Acid and Sulfur Recovery Plants** The provisions of Subsections 1810.2 and 1810.3 shall not be applicable to processes operated in conjunction with the desulfurization of by-product coke-oven gas, provided that the standards set forth in Subsection 1809.6B. have been complied with.

.5 **Blast Furnace Slips**

A. Emissions from blast furnaces shall be kept to a minimum. No person shall cause, suffer, or allow any blast furnace to emit air contaminants, as a result of a slip, more than sixty (60) times in any consecutive twelve (12) month period or more than ten (10) times in any consecutive thirty (30) day period. For the purpose of this Subsection, a blast furnace slip is defined as a sudden emission of gas containing particulate matter of an opacity equal to or greater than No. 2 of the Ringelmann Scale or of an equivalent opacity from the relief valves at the top of the furnace.

B. No person shall cause, suffer, or allow the operation of any blast furnace without providing a device for measuring and recording all blast furnace slips. Such device or devices must be approved by the Director.

C. All devices used for observing and recording blast furnace slips shall be maintained in good order. Safe and adequate means for inspection of such devices shall be provided by the person responsible for the blast furnace.

D. All persons responsible for blast furnaces shall make available to the Director, on request, the records of the required observation and recording devices. These records shall be deemed as an admission by the responsible person of the number of blast furnace slips occurring, but they shall not be deemed as a limit on the Director's action to present evidence that a greater number of slips occurred than the records indicate.

.6 **Slag Quenching** No person shall cause, suffer, or allow the water quenching of slag at any slag handling location, except if such quenching is performed under conditions which prevent the discharge of hydrogen sulfide or other air contaminants into the open air.

.7 **Open Burning**

A. No person shall cause, suffer, or allow the open burning of any material, except where a permit has been obtained from the Director or where the open burning is conducted solely for the purpose of non-commercial preparation of food for human consumption or for recreation.

B. The Director may issue a permit for the open burning of material during a period set by the Director, but only when the open burning is solely for:

1. The abating of a fire hazard when a fire is set by or under the supervision of a public officer
2. The instruction of personnel in fire fighting
3. The fostering of agriculture
4. The conducting of a ceremony

5. Light, ornament, or other purpose contributing a negligible amount of air contaminants.

C. Coal Refuse Fires

1. The persons responsible for any coal refuse pile or dump shall in the case of a fire in the pile or dump:

(1) Report such fire to the Director upon discovery, and

(2) Extinguish such fire at once, or demonstrate to the satisfaction of the Director that all necessary steps are being taken to extinguish such fire, and

(3) Report the status of such fire to the Director at such periods as he may require.

2. No person shall cause, suffer, or allow the establishment of a coal refuse pile or dump until a permit has been obtained from the Director. The Director shall not grant a permit unless adequate measures have been taken to prevent the ignition of the coal refuse pile or dump, such as removal of all combustible materials and vegetation from the site, protection from trespassing, and such other requirements as the Director may deem necessary in view of local conditions.

1811. REPORTING AND TESTING OF SOURCES

.1 **Reporting** Any person who owns or operates a source of air contaminants, shall, within ninety (90) days after order by the Director, report to the Director in a form prescribed by the Director such information as the Director may require and is necessary to assess the actual and potential contribution of the source to the air quality of the County, including, but not limited to, information on the quantity and nature of potential or actual emissions and the nature and effectiveness of any gas cleaning devices operating in conjunction with the source.

.2 **Testing**

A. If there is reasonable cause to believe that any equipment or process is in violation of any provision of this Article, or if there is reasonable cause to believe that a source is a substantial contributor to the degradation of air quality, the Director may conduct emission or ambient air tests or may order the person responsible for such source to conduct and complete, within a specified period of time, under conditions prescribed by the Director, such tests as the Director deems necessary. The results of such tests shall be submitted to the Director within twenty (20) days after the tests have been completed.

B. At the request of the Director, the person responsible for such a source shall provide adequate sampling ports, safe sampling platforms, and adequate utilities for the performance of tests at such source by the Director.

C. Whenever a test is required to be performed by a person who is responsible for a source, such test and results will be accepted by the Director only if:

1. Such tests are made and the results calculated in accordance with test procedures approved by the Director, and

2. The Director has been given reasonable notice of the testing and has been given reasonable opportunity to observe and participate in the testing, and

3. The testing is conducted under the direct supervision of persons qualified by training and experience satisfactory to the Director to conduct such testing, and

4. The reports of the tests are accurate and comprehensive.

D. Stationary Sources

1. The following are applicable to source tests for determining emissions from stationary sources:

(1) All performance tests shall be conducted while the source is operating at maximum routine operating conditions or under such other conditions, within the capacity of the equipment, as may be requested by the Director.

(2) The Director shall consider test results for approval where sufficient information is provided to verify the source conditions existing at the time of the test and where adequate data is available to show the manner in which the test was conducted. Information submitted to the Director shall include, as a minimum:

(a) A thorough description of the source, of any gas cleaning device, and the flue, and

(b) Source operating conditions, e.g., charging rate of raw material or rate of production of final product, combustion rate, boiler pressure, oven temperature, and other conditions which may affect emissions from the source, and

(c) The location of the sampling ports, and

(d) Effluent characteristics, including velocity, temperature, moisture content, gas composition, and density, e.g., percent SO_2, CO_2, O_2, and N_2, and static and barometric pressures at pertinent points in the system, and

(e) Sample collection techniques employed, including procedures used, equipment descriptions, data to verify that isokinetic sampling occurred, where applicable, for particulate matter collection, and that acceptable test conditions were met, and,

(f) Laboratory procedures and results, and

(g) Calculated results.

2. The following are applicable to tests for determining emissions of particulate matter from stationary sources:

(1) Test methods for particulate emissions shall include dry filters, or wet impingers, or both, as the Director may specify, and provide for at least a ninety-five (95) percent collection efficiency of particulate matter.

(2) Isokinetic sampling procedures shall be used whenever it is possible to apply them in sampling for particulate matter emissions, and the weights of all soluble and insoluble particulate shall be determined gravimetrically after removal of uncombined water.

(3) Test methods and procedures shall be equivalent to, or modified to produce results equivalent to, those results which would be obtained by employing the procedures specified in References 1 and 2 of Subsection 1811.2F. The equipment shall be inert where appropriate and similar to that specified in References 1, 2, and 3 of Section 1811.2F. (References are compiled in Subsection 1811.2F.)

(4) The minimum sampling time shall be one hour (1), and the minimum sample volume shall be fifty (50) cubic feet corrected to standard conditions (dry basis).

(5) Results shall be reported both as pounds of particulate matter per hour and in accordance with units specified in Subsections 1809.3, 1809.4, and 1809.5 pertaining to fuel-burning or combustion equipment, processes, or incinerators.

(6) Where the Director determines that the above methods and procedures are not applicable, the Director shall specify the appropriate sampling and testing procedures.

3. The following are applicable to tests for determining emissions of SO_x, H_2S, and NO_x from stationary sources:

(1) Test methods for SO_x, H_2S, and NO_x shall provide for at least ninety-five (95) percent collection efficiency of oxides of sulfur, hydrogen sulfide, and oxides of nitrogen, respectively.

(2) Sample collection for SO_x shall be at a rate proportional to the stack gas velocity, where applicable, and the weight of oxides of sulfur shall be determined volumetrically.

(3) Test methods and procedures for SO_x shall be equivalent to, or modified to produce results equivalent to, those results which would be obtained by employing the procedures specified in Reference 2 of Subsection 1811.2F. The equipment shall be inert where appropriate and similar to that specified in Reference 2 of Subsection 1811.2F.

(4) Sample collection for H_2S shall be at a rate proportional to the stack gas velocity, where applicable, and the weight of hydrogen sulfide shall be determined colorimetrically.

(5) Test methods and procedures for H_2S shall be equivalent to, or modified to produce results equivalent to, those results which would be obtained by employing the procedures specified in Reference 4 of Subsection 1811.2F. The equipment shall be inert where appropriate and similar to that specified in Reference 2 of Subsection 1811.2F.

(6) For determining emissions of SO_x and H_2S, the minimum sampling time shall be one (1) hour and the minimum sample volume shall be thirty (30) cubic feet corrected to standard conditions (dry basis).

(7) Test methods, procedures, and equipment for NO_x shall be similar to those specified in Reference 1 of Subsection 1811.2F.

(8) Results shall be reported as pounds per hour of SO_x as SO_2, pounds per hour of H_2S, or pounds per hour of NO_x as NO_2, and in accordance with units specified in the Sections and Subsections covering sulfur compounds, fuel-burning or combustion equipment, by-product coke-oven gas, sulfuric acid plants, and sulfur recovery plants.

4. Test methods and procedures for determining emissions of contaminants other than particulate matter, SO_x, H_2S, and NO_x, from stationary sources shall be consistent with accepted air pollution testing practices and with obtaining accurate results which are representative of the conditions evaluated, and such procedures shall be approved by the Director and shall be clearly recorded in the report of test results.

5. Test methods and procedures for fugitive particulate matter may include ambient test procedures approved by the Director and in accordance with or equivalent to procedures specified to References 4, 5, 6, 7, 8, and 9 of Subsection 1811.2F. and other provisions of this Article.

6. The Director may issue a supplement to this Section containing detailed information on source test methods and procedures and indicating the information that should be contained in a report of emissions.

7. Where the Director determines that the methods and procedures set out in Subsection 1811.2 are not applicable, the Director shall specify the appropriate sampling and testing procedures.

E. Ambient Levels of Air Contaminants Methods for determining ambient levels of air contaminants are as follows:

1. Sampling and analytical methods that may be used directly or used as reference standards against which other methods may be calibrated. These methods are set out in Table V.

TABLE V

Contaminant	Reference Standards Sampling Method	 Analytical Method
Settled particulates (total)	open top cylinder (6)	gravimetric (6)
Lead	high-volume filtration (7)	spectrographic (7)
Beryllium	high-volume filtration (7)	spectrographic (7)
Sulfates (as H_2SO_4)	high-volume filtration (7)	turbidimetric (8)
Fluorides (total soluble, as HF)	filtration plus gas absorption (9)	thorium-alizarin lake titration (9)
Hydrogen Sulfide	gas absorption (4)	methylene blue method (4)
Suspended Particulate Matter	high-volume filtration (7)	gravimetric (7)

The numbers following the reference standards refer to references compiled at the end of Subsection 1811.2F.

2. Sampling and analytical procedures promulgated by the Administrator of the United States Environmental Protection Agency pursuant to the provisions of the Clean Air Act are hereby incorporated, by reference, as part of the methods listed in this section.

F. References

1. "Standards of Performance for New Stationary Sources," Federal Register Part II, Volume 36, No. 247, pp. 24876—24895, December 23, 1971, Washington, D. C.

2. Devorkin, H., et al., "Air Pollution Source Testing Manual," Los Angeles Air Pollution Control District, Second Printing, November, 1965.

3. "Standard Method for Sampling Stacks for Particulate Matter," American Society for Testing Materials, D 2928-71, 1916 Race Street, Philadelphia, Pennsylvania.

4. Jacobs, M. D. et al., "Ultramicrodetermination of Sulfides in Air," *Anal. Chem.*, 29:1349 (1957).

5. "Air Sampling Instruments," 2nd ed., American Conference of Governmental Industrial Hygienists, 1014 Broadway, Cincinnati 2, Ohio, 1962, pp. B-3-12-B-3-14.

6. "Recommended Standard Method for Continuing Dust Fall Survey (APM-1, Revision 1)," TR-2 Air Pollution Measurements Committee, *J. Air Poll. Control Assoc.*, 16:372 (1966).

7. "Air Pollution Measurements of the National Air Sampling Network: Analyses of Suspended Particulates 1957-1961," Public Health Service Pub. No. 978, Washington, D. C., 1962.

8. Interbranch Chemical Advisory Committee, "Selected Methods for the Measurement of Air Pollutants," PHS Pub. No. 999-AP-11, Cincinnati, Ohio, 1965, p. I-1.

9. "Standard Method of Test for Inorganic Fluoride in the Atmosphere," ASTM Standards on Methods of Atmospheric Sampling and Analyses, Philadelphia, Pennsylvania, 1962, p. 67.

1812. AMBIENT AIR QUALITY STANDARDS

.1 National Ambient Air Quality Standards promulgated by the Administrator of the United States Environmental Protection Agency pursuant to the provisions of the Clean Air Act, are hereby incorporated, by reference, as part of the standards of this Section.

.2 The Ambient Air Quality Standards adopted by the Pennsylvania Environmental Quality Board, pursuant to the provisions of the "Air Pollution Control Act," 1960, January 8, P.L. (1959) 2119, are hereby incorporated, by reference, as part of the standards in this Section.

Amendment - Section 1816 - Shutdown or Breakdown of Equipment

I. Existing Section 1816.2 is deleted in its entirety and the following new Section 1816.2 added:

.2 Breakdown

A. For purposes of this subsection, "breakdown" shall mean any sudden or unexpected event which has the effect of causing any air pollution control device, process equipment or any other potential source of air contaminants to fail, malfunction or otherwise abnormally operate in such manner that emissions into the ambient air are, or may be, increased.

B. In the event that any air pollution control device, process equipment or other source of air contaminants breaks down in such manner as to have a substantial likelihood of causing the emission of air contaminants in violation of this Article, or of causing the emission into the ambient air of potentially toxic or hazardous materials, the person responsible for such device, equipment or source shall immediately notify the Director of such breakdown and shall, as expeditiously as possible but in no event later than seven (7) days after the original notification, provide written notice to the Director

To the maximum extent possible, all oral and written notices required by this subsection shall include all pertinent facts, including:

1. Identification of the specific device or devices which has broken down, its location and permit number (if permitted), together with an identification of all related devices, equipment and other sources which will be affected.

2. The nature and probable cause of the breakdown.

3. The expected length of time that the device will be inoperable or that the emissions will continue.

4. Identification of the specific material(s) which are being, or are likely to be, emitted, together with a statement concerning its toxic qualities, including its qualities as an irritant, and its potential for causing illness, disability or mortality.

5. The estimated quantity of each material being, or likely to be, emitted.

6. Measures, including extra labor and equipment, taken or to be taken to minimize the length of the breakdown, the amount of air contaminants emitted or the ambient effects of the emissions, together with an implementation schedule.

7. Measures being taken to shutdown or curtail the affected source(s) or the reasons why it is impossible or impractical to shutdown the source(s), or any part thereof, during the breakdown.

C. Notices required by subparagraph B. shall be updated, in writing, as needed to advise the Director of changes in the information contained therein. In addition, any changes concerning potentially toxic or hazardous emissions shall be reported immediately. All additional information requested by the Director shall be submitted as expeditiously as practicable.

D. The Director shall immediately be notified when the condition causing the breakdown is corrected or the device, equipment or other source is placed into operation. Within seven (7) days thereafter, written confirmation shall be submitted pursuant to subparagraph B.

E. This subsection shall not apply to breakdown of air pollution control devices which occur during the initial start up of said devices, provided that emissions resulting from the breakdown are of the same nature and quantity as the emissions occurring prior to start up of the air pollution control devices.

F. In no case shall the reporting of a breakdown prevent prosecution for any violation of this Article.

II. In addition, a new Section 1816.4 is added as follows:

.4 Failure to submit any report or notice required by this Section within the time specified shall be a violation of this Article.

Effective: March 31, 1978

BAY AREA APCD
(SAN FRANCISCO)

BAY AREA
AIR POLLUTION CONTROL DISTRICT

REGULATION 2

939 Ellis Street
San Francisco, California 94109

DIVISION 3 – GENERAL LIMITATIONS AND REQUIREMENTS

§ 3000 This division applies to all **source operations**; namely, **incineration, salvage, heat transfer, general combustion**, and **general operations** as defined in §§ 1110.1 through 1110.5 of Chapter 1, Division 1, unless such **source operation** is excluded under Chapter 2, Division 1.

CHAPTER 1 – GENERAL LIMITATIONS

§ 3110 VISIBLE EMISSIONS. Except as provided in §§ 3111 through 3114, no **person** shall cause, let, permit, suffer, or allow the **emission** for more than three minutes in any one hour of a gas stream containing air contaminants which, at the **emission point** or within a reasonable distance of the **emission point**, is *(Amended by Resolution No. 398, dated March 3, 1965)*

§ 3110.1 As dark or darker in shade as that designated as No. 1 on the Ringelmann Chart as published in the United States Bureau of Mines Information Circular 7718, or *(Amended by Resolution 635, Dated Nov. 5, 1970)*.

§ 3110.2 Of such opacity as to obscure an observer's view to a degree equal to or greater than does smoke described in § 3110.1; and the determination of such opacity shall be according to procedures in Chapter 6, Division 8.

§ 3111 Where the presence of uncombined water is the only reason for the failure of an **emission** to meet the limitations of § 3110, that section shall not apply. The burden of proof which establishes the application of this § 3111 shall be upon the **person** seeking to come within its provisions. *(Amended by Resolution No. 398, dated March 3, 1965)*

§ 3112 § 3110 shall not apply to any **emission** on the basis of any observation of an air contaminant observed while such contaminant is inside a bona fide building.

NOTES TO § 3111

Note 1. The Control Officer from time to time prepares and distributes a statement of practice in administering § 3111. These statements are not adopted by the Board of Directors as a part of this regulation. They are guides to staff activity and are intended to be helpful guides to the public.

Note 2. Water mist alone is not a "noxious mist" and therefore not an "air contaminant" as defined in Health and Safety Code § 24348.3.

§ 3120 SULFUR DIOXIDE

§ 3121 No **person** shall cause, let, permit, suffer or allow any **emission** of sulfur dioxide from sources other than ships which results in ground level concentrations of sulfur dioxide at any given point in excess of 0.5 **ppm** (vol) for 3 consecutive minutes or 0.5 **ppm** (vol) averaged over 60 consecutive minutes, or 0.04 **ppm** (vol) averaged over 24 hours, or any of the limits specified in Table 1. § 3121 shall not apply to the ground level concentrations occurring on the property from which such **emission** occurs, provided such property, from the **emission point** to the point of any such concentration, is controlled by the **person** responsible for such **emission**. *(Amended by Resolution 834, dated March 21, 1974.)*

§ 3122 Except as provided in § 3123, no **person** shall cause, let, permit, suffer, or allow the **emission** of gas containing sulfur dioxide from sources other than ships in excess of 300 **ppm** (vol). No **person** shall cause, let, permit, suffer, or allow the **emission** from a ship of gas containing sulfur dioxide in excess of 2000 **ppm** (vol) except when the ship is entering port from outside the District. All sampling of exhaust gases shall follow the techniques prescribed in Chapter 2, Division 8. For purposes of this section 3122, all sulfur present in gaseous compounds containing oxygen shall be deemed to be present as sulfur dioxide, and analyses of samples taken to determine the amount of sulfur dioxide in exhaust gases shall be made as specified in Chapter 1, Division 9. Tests for determining compliance with this section 3122 shall be for not less than 15 consecutive minutes or 90% of the time of actual **source operation**, whichever is less. *(Amended by Resolution 834, dated March 21, 1974; amended March 17, 1976.)*

§ 3123 **Emissions** exceeding the limits established in §3122 shall not constitute a violation of that section provided that all requirements of this Section 3123, to wit, §§3123.1 through 3123.9, inclusive, are satisfied: provided, however, that emissions which exceed 200 pounds of sulfur dioxide per day shall not in any event exceed a maximum emission concentration of 6,000 ppm (by volume) of sulfur dioxide, averaged over a 24 hour period. *(Amended November 3, 1976.)*

§ 3123.1 Such **emissions** shall not result in ground-level concentrations of sulfur dioxide exceeding the limits established by § 3121.

§ 3123.2 The **person** responsible for such **emissions** shall have notified the control officer in writing, prior to such **emission**, of his intent to operate under the provisions of § 3123. Such notice shall include information as to the location of all significant **emission points**, the location of the monitoring stations specified in §§ 3123.3 and 3123.4, and the nature of the source operations related to each such emission.

§ 3123.3 Such person shall provide at least three recording sulfur dioxide monitoring stations located in the area surrounding the source, which stations shall be operated in accordance with the specifications of Chapter 4, Division 8.

§ 3123.4 Such person shall provide at least one recording meteorological station equipped to record wind speed and wind direction.

§ 3123.5 Such person shall provide the necessary care and maintenance services so that the instruments will function properly and adequately record sulfur dioxide exposures in the area.

§ 3123.6 Such person shall provide to the control officer a summary of the data obtained from such instruments during each calendar month. Such summary shall be in such form and detail as will show the degree of compliance with § 3121, and the time, location, extent, and duration of any recorded violation of the provisions of § 3121; shall include data giving the total mass rate of emission of sulfur dioxide from the emission points specified in § 3123.2, and a detailed report of instrument performance and maintenance; and shall be submitted within the calendar month immediately succeeding the recording of the data.

§ 3123.7 Such person shall keep for a period of at least two years all records gathered as a result of this section 3123, and shall make these available to the control officer at his request. *(Amended by Resolution 635, dated November 5, 1970.)*

§ 3123.8 Such person shall examine at the time of each instrument maintenance check and in any case at intervals of no greater than every seven days instrument records taken pursuant to the requirements of this section 3123 to determine compliance with § 3121. Any recorded violation of § 3121 shall be reported to the control officer within the next normal working day after such examinations. *(Amended by Resolution 635, dated November 5, 1970.)*

§ 3123.9 Whenever the records indicate that a violation of § 3121 has occurred the person responsible for such emission must furnish evidence that proper action has been taken to prevent recurrence, or a violation of § 3123 will be deemed to have occurred and emission will be regulated by § 3122. When instrument records are not adequate to show compliance with § 3121 the control officer may specify the schedule to be followed for producing a satisfactory record history.

§ 3123.10 *(Repealed by Resolution 674, dated July 22, 1971.)*

§ 3123.11 *Repealed by Resolution 674, dated July 22, 1971.)*

§ 3124 All **persons** subject to §§ 3120, 3121 and 3122 may be required to install and maintain, at or within a reasonable distance before the **emission point**, sensing, indicating and recording equipment that will accurately sense, indicate and record minute by minute fluctuations of the volume of gases being emitted, and the presence and concentration of sulfur dioxide, subject to the conditions of § 3124.4 *(Added by Resolution 635, dated November 5, 1970.)*

§ 3124.1 The equipment required by Section 3124 shall be calibrated, maintained, serviced and repaired by the **person** responsible for the operation so that it will function and adequately sense, indicate and record the phenomena it is designed to sense, indicate and record. *(Added by Resolution 635, dated November 5, 1970.)*

§ 3124.2 The records of the measurements required by § 3124 shall be kept for a period of two years, and they shall be made available to the Control Officer at his request. *(Added by Resolution 635, dated November 5, 1970.)*

§ 3124.3 The **person** responsible for the **operation** shall provide to the Control Officer a summary of the data obtained from the equipment required by § 3124 during each calendar month. Such summary shall be in such form as is prescribed by the Control Officer. *(Added by Resolution 635, dated November 5, 1970.)*

§ 3124.4 The Control Officer may require that instrumentation prescribed by § 3124 shall be installed when he has reason to believe that **emissions** of sulfur dioxide exceeded those allowed by § 3121 or § 3122. *(Added by Resolution 635, dated November 5, 1970.)*

§ 3131 No **person** shall cause, let, permit, suffer, or allow, from any source **operation** manufacturing sulfuric acid using as a principal raw material any sulfur-containing material, any **emission** having a concentration of SO_3 or H_2SO_4, or both, expressed as 100% H_2SO_4, exceeding 0.04 grain per **standard dry cubic foot** of **exhaust gas volume**. *(Added by Resolution 635, dated November 5, 1970.)*

§ 3131.1 No **person** shall cause, let, permit, suffer, or allow, from any source **operation** manufacturing sulfur using as a principal raw material any sulfur-containing material, any **emission** having a concentration of SO_3 or H_2SO_4, or both, expressed as 100% H_2SO_4, exceeding 0.08 grain per **standard dry cubic foot** of **exhaust gas volume**. *(Added by Resolution 635, dated November 5, 1970.)*

CHAPTER 2 — GENERAL REQUIREMENTS

§ 3210 SAMPLING FACILITIES. The **person** responsible for **emission** of air contaminants, from any **emission point**, for which **emission** limits are established in this regulation shall, upon request of the Control Officer, provide in connection with such **emission point** and related **source operations** such sampling and testing facilities as may be necessary for proper determination of the nature, extent, quantity and degree of air contaminants which are or may be emitted as a result of such **operation**. Such facilities may be either permanent or temporary and shall be suitable for determination consistent with the **emission** limits established in this regulation; and shall comply with all applicable laws and regulations concerning safe construction or safe practice in connection with such facilities. *(Amended November 5, 1970.)*

§ 3210.1 Where ambient air or source tests or any other data indicate that **emissions** of air contaminants from any **emission point** may be in potential violation of limits established in this regulation, the Control Officer may require the **person** responsible to monitor continuously that **emission point** or the ambient air for the specific contaminants or conditions (e.g., opacity) in potential violation. Such monitoring instruments may be either permanent or temporary and shall be suitable for determinations consistent with the **emission** limits established in this regulation; and shall comply with all applicable laws and regulations concerning safe construction or safe practice in connection with such instruments. *(Added November 5, 1970.)*

§ 3210.2 The equipment required by Section 3210.1 shall be calibrated, maintained, serviced and repaired by the person responsible for the operation so that it will function and adequately sense, indicate and record the phenomena it is designed to sense, indicate and record. *(Added by Resolution 635, dated November 5, 1970. Amended by Resolution 674, dated July 22, 1971.)*

§ 3210.3 The records of the equipment required by Section 3210.1 shall be kept for a period of two years, and shall be made available to the

Control Officer at his request. ***(Added by Resolution 635, dated November 5, 1970.)***

§ 3210.4 The person responsible for the operation shall provide to the Control Officer a summary of the data obtained from the equipment required by Section 3210.1 during each calendar month. Such summary shall be in such form as is prescribed by the Control Officer. ***(Added by Resolution 635, dated November 5, 1970.)***

§3210.5 Notwithstanding the requirements of Section 3210.1, the Air Pollution Control Officer shall require the person responsible for emissions from the following source operations to install, calibrate, operate and maintain all monitoring equipment necessary for continuously monitoring the quantity of air pollutants specified below:

(a) NO_x, CO_2 or O_2, and opacity from steam generators with a heat input of 250 million British Thermal Units or more per hour and with a use factor of at least 30 percent,

(b) NO_x from all new nitric acid plants, and existing plants having a production capacity in excess of 300 tons/day of 100% nitric acid,

(c) SO_2 from sulfuric acid plants,

(d) SO_2 from sulfur recovery plants emitting more than 100 pounds per day of SO_2,

(e) SO_2 and opacity from the CO boilers of the regenerators of fluid catalytic crackers, and

(f) SO_2 and opacity from the CO boilers of the regenerators of fluid cokers with a feed rate greater than 10,000 barrels per day,

(g) SO_2 from fossil fuel fired steam generators with a heat input of 250 million British Thermal Units or more per hour with a use factor of at least 30 percent and utilizing flue gas desulfurizing (FGD) units. *(Amended March 2, 1977.)*

§ 3210.6 The in-stack monitoring systems required under Section 3210.5 shall be installed in a location deemed proper by the Air Pollution Control Officer to be representative of the true emissions of the pollutant being measured. *(Amended March 2, 1977.)*

§ 3210.7 The in-stack monitoring systems required under 3210.5 which are also required under 40 CFR Part 51, shall meet the performance specification requirements outlined in 40 CFR Part 51, or equivalent specifications established by the Air Pollution Control Officer. *(Added March 2, 1977.)*

§ 3210.8 In-Stack monitoring systems for NO_x and SO_2 required by Section 3210.5 shall be calibrated when installed using accepted EPA source testing methods or their equivalent to insure a relative error of 20 percent or less. Data developed in the calibration shall be provided to the Air Pollution Control Officer for his review and determination of its accuracy. *(Added March 2, 1977.)*

§ 3210.9 A violation of any applicable emission standards recorded by the monitoring systems specified in 3210.5 shall be reported to the APCO within 96 hours by the person responsible for the emissions. *(Added March 2, 1977.)*

§ 3210.10 The APCO shall report violations received under 3210.9 to the Air Resources Board within 5 working days after receiving the report of the violation from the person responsible for the emissions. *(Added March 2, 1977.)*

The requirements of Sections 3210.2 through 3210.4 shall apply to source operations included in Section 3210.5.

The effective date of Sections 3210.5 and 3210.6 shall be March 3, 1977.

By June 3, 1976, all sources which are affected by this section shall notify the Air Pollution Control Officer in writing of the plans and specifications for installation of the required monitors.

By September 3, 1976, the sources affected shall notify the Air Pollution Control Officer in writing of purchase orders submitted to appropriate vendors for the purchase of the required monitors.

By December 3, 1976, the sources affected shall install and begin testing the monitors required in this section.

By March 3, 1977, the sources required to install monitors shall be in full compliance with Section 3210.5. *(Added February 18, 1976.)*

The effective date of Sections 3210.7, 3210.8, 3210.9 and 3210.10 and new monitoring requirements under 3210.5 shall be 90 days after the adoption of these Sections.

~~§ 3211 REGISTRATION. Except as excluded by § 1210 through § 1222, Chapter 2, Division 1, each person responsible for emission of air contaminants, whether or not limits are established by this regulation for emission of such contaminants, shall register with the control officer: (1) his business name, (2) address, (3) name of responsible managing officer, (4) a description of the business entity and (5) the nature of the business. He shall thereafter provide, on an annual basis on registration forms provided by the control officer, any information regarding such emission as may be required. Every person regulated by this regulation may be served with notices, including notices of hearing before the~~

~~CHAPTER 2 — REQUIREMENTS~~

~~§ 4210 Every person responsible for an emission regulated by § 4111.1 shall have and maintain means whereby the operator of the equipment shall be able at all times during the operation to know the appearance of the emission.~~

~~§ 4211 During periods in which tests are being made to determine the nature, extent, quantity, or degree of air contaminants which are or may be emitted from an incineration operation or a salvage operation, such operation shall be carried on in accordance with the requirements of Chapter 5, Division 8.~~

~~CHAPTER 3 — EXCEPTIONS~~

~~§ 4310 *Deleted by Resolution 578, dated May 7, 1969.*~~

DIVISION 5 — HEAT TRANSFER OPERATIONS

CHAPTER 1 — LIMITATIONS

§ 5110 SULFUR DIOXIDE. No **person** shall cause, let, permit, suffer, or allow the **emission** from any **heat transfer operation** of sulfur dioxide in excess of the limits provided in §§ 3121 and 3122, Chapter 1, Division 3.

§ 5110.1 No **person** shall cause, let, permit, suffer, or allow, the **emission** from any **heat transfer operation** of hydrogen sulfide in excess of the limitations provided in §§ 11100 through 11102.8, Chapter 1, Division 11. *(Added by Resolution 635, dated November 5, 1970.)*

§ 5111 VISIBLE EMISSIONS.

§ 5111.1 No **person** shall cause, let, permit, suffer, or allow any **emission** from any **heat transfer operation** which does not comply with the visible **emission** limitations in § 3110, Chapter 1, Division 3, except as provided in § 5111.3.

§ 5111.2 No **person** shall cause, let, permit, suffer, or allow the **emission** from any **heat transfer** operation of particles in sufficient number to cause annoyance to any other **person,** which particles are sufficiently large as to be visible as individual particles at the **emission point** or of such size and nature as to be visible individually as incandescent particles. This section 5111.2 shall only apply if such particles fall on real property other than that of the **person** responsible for the **emission.**

§ 5111.3 The limitations of § 5111.1 shall not apply to **emissions** resulting from soot-blowing on any oil-fired **heat transfer operation,** provided such **emissions** are not equal to or greater than Ringelmann No. 3 or an equivalent obscuration within the meaning of §§ 3110.1 and 3110.2; and provided further that the aggregate duration of such **emissions** during any twenty-four hour period does not exceed 6.0 minutes per billion Btu gross heating value of oil fuel burned during such twenty-four hours; and provided further that such **operation** uses fuel at a rate not less than 140 million Btu per hour.

~~§ 5112 PARTICULATE MATTER. No person shall cause, let, permit, suffer, or allow any **emission** from a **heat transfer** operation of **particulate** matter in excess of 0.15 grain per **standard dry cubic foot** of **exhaust gas.** For the purposes of this section 5112, the actual concentration measured shall be corrected to a concentration which the same quantity of **particulate** matter would constitute in the **exhaust gas** minus water vapor, corrected to **standard conditions** and containing 6% oxygen by volume. Calculation of this corrected concentration from the actual measured concentration shall follow the procedure given in Chapter 1, Division 8. Tests to determine compliance with this section 5112 shall be for not less than 50 minutes in any consecutive 60 minutes, or 90% of the time of actual **source** operation, whichever is less. *(Amended by Resolution 635, dated November 5, 1970.)*~~

~~CHAPTER 2 — REQUIREMENTS~~

~~§ 5210 Every **person** responsible for an **emission** regulated by § 5111.1 shall have and maintain means whereby the operator of the equipment shall be able at all times during the **operation** to know the appearance of~~

~~the **emission.** This section shall not apply to **operations** using fuel supplied to the burner piping in a gaseous state; nor to **operations** using gaseous fuel on an interruptible service contract from a public utility, during the burning of alternate fuel.~~

DIVISION 6 — GENERAL COMBUSTION AND GENERAL OPERATIONS

CHAPTER 1 — LIMITATIONS

§ 6110 SULFUR DIOXIDE. No **person** shall cause, let, permit, suffer, or allow the **emission** from any **general combustion operation** or **general operation** of sulfur dioxide in excess of the limits provided in §§ 3121 and 3122, Chapter 1, Division 3.

§6110.1 No **person** shall cause, let, permit, suffer, or allow, the **emission** from any **general combustion operation** or **general operation** of hydrogen sulfide in excess of the limitations provided in §§ 11100 through 11102.8, Chapter 1, Division 11. *(Added by Resolution 635, dated November 5, 1970.)*

§ 6111 VISIBLE EMISSIONS

§ 6111.1 No **person** shall cause, let, permit, suffer, or allow any **emission** from any **general combustion operation** or **general operation** which does not comply with the visible **emission** limitations in § 3110, Chapter 1, Division 3.

§ 6111.2 No **person** shall cause, let, permit, suffer, or allow the **emission** from any **general combustion operation** of particles in sufficient number to cause annoyance to any other **person,** which particles are sufficiently large as to be visible as individual particles at the **emission point** or of such size and nature as to be visible individually as incandescent particles. This section 6111.2 shall only apply if such particles fall on real property other than that of the person responsible for the **emission.**

§ 6112 PARTICULATE MATTER

~~§ 6112.1 No **person** shall cause, let, permit, suffer, or allow the **emission** from any **general operations** or **general combustion operation** of **particulate matter** from any **emission point** in a concentration in excess of 0.15 grain per standard dry cubic foot of exhaust gas volume. *(Amended by Resolution 635, dated November 5, 1970.)*~~

~~§ 8511 The incinerator will be tested under a range of **operations** that includes a detectable degree of smoke-back through the charging doors; except that where either the maximum control and feed settings or the maximum physically possible charging rate of the registered types of materials do not result in such smoke-back, the range of **operations** shall include a charging rate which is the maximum permitted by such control and physical limitations.~~

~~§ 8512 Material charged during the test period will, insofar as reasonably possible, be representative of material normally charged to the incinerator.~~

~~§ 8513 Full-time **operation** is **operation** using an operator whose sole duty with minor exceptions is the **operation** of the incinerator for a minimum of 30 hours per week.~~

~~§ 8514 Part-time **operation** is any **operation** other than full-time **operation**.~~

~~§ 8515 Tests on any incinerator that is operated on a part-time basis shall be accomplished without a preheat period.~~

~~§ 8516 Any incinerator to be tested shall be sampled during burn-down as well as during the stabilized and light-up or preheat periods whichever apply.~~

CHAPTER 6 — PROCEDURE FOR MAKING OBSERVATIONS TO DETERMINE COMPLIANCE WITH § 3110

§ 8600 The provisions of this Chapter shall govern observations of **emissions** to determine compliance with §3110. These provisions shall be applied to each observation to the extent they are applicable, and to whatever extent time and physical circumstances reasonably permit.

§ 8610 Observations shall be made from any position such that the line of observation is at approximately a right angle to the line of travel of the emitted material.

§ 8611 The plume shall be observed against a suitable background.

§ 8612 Observations during daylight hours should be made with the observer facing generally away from the sun.

§ 8613 Observations during hours of darkness should be made with the aid of a light source.

§ 8614 Readings shall be noted at approximately 15 second intervals during observation, except that intervals up to 1 minute shall be permitted where the appearance of the emission does not vary during such interval.

§ 8615 The general color of the emission during the period of observation shall be noted as a part of the record of observation.

~~CHAPTER 7—DETERMINATION OF THE CONCENTRATION OF PARTICULATE MATTER FOR THE PURPOSES OF § 3113~~

~~§ 8710 Concentration of particulate matter shall be calculated as the average of at least two tests.~~

~~§ 8711 Each such test shall be for a minimum of 30 minutes at a sampling rate of not more than 5.0 standard cubic feet per minute.~~

~~§ 8712 Except as limited by minimum time and allowable rate in § 8711 the minimum volume sampled during each test shall be "V_m" standard cubic feet where~~

$$V_m = 20\ L^{0.8}$$

~~where "L" is the significant dimension of the emission point in feet.~~

~~§ 8713 During the entire period of each test the appearance of the emission shall be observed by the control officer to determine its shade or opacity in the sense of § 3110.~~

DIVISION 9 — ANALYTICAL PROCEDURES

CHAPTER 1 — DETERMINATION OF TOTAL SULFUR OXIDES IN SAMPLES TAKEN FROM GAS STREAMS

§ 9110 SCOPE. This method describes a procedure for the determination of the total sulfur oxides in **exhaust gases.**

§ 9111 INTERFERENCES. Acidic and alkaline materials interfere if present in the waste gases and corrections may be made for them by the use of specific analytical techniques. Any sulfuric acid collected in the impinger shall be included as sulfur oxides.

§ 9112 OUTLINE OF METHOD. The sulfur oxides are absorbed from the gas stream in a solution of hydrogen peroxide. The acid formed is titrated with standard alkali.

§ 9113 APPARATUS. Sampling train consists of 3 Greenburg-Smith impingers or other adequate absorbing devices, each containing 100 ml of 3 per cent H_2O_2. The impingers are connected in series, followed by a dry meter and a source of suction. During sampling the impingers are immersed in an ice bath.

§ 9114 REAGENTS. Unless otherwise indicated, it is intended that all reagents conform to the specifications established by the Committee on Analytical Reagents of the American Chemical Society where such specifications are available; otherwise, use best available grade.

§ 9114.1 BROMCRESOL GREEN INDICATOR SOLUTION—Bromcresol green indicator solution, 0.04 per cent. Mix 0.1 g of dry powder in a mortar with 14.3 ml of 0.01N sodium hydroxide solution. Dilute to 250 ml with distilled water.

§ 9114.2 HYDROGEN PEROXIDE SOLUTION (SULFATE FREE). Hydrogen peroxide solution, 3 per cent. Prepare by diluting 30 per cent hydrogen peroxide with distilled water. Store in a dark colored glass-stoppered bottle.

§ 9114.3 SODIUM HYDROXIDE SOLUTION. Sodium hydroxide solution, approximately 0.2 N. For each liter of solution dissolve 8.0 g of sodium hydroxide pellets (NaOH) in 150 ml to 200 ml of distilled water and dilute to volume. Determine normality to within ± 0.001 N by standardization against potassium acid phthalate using bromcresol green indicator.

§ 9115 SAMPLING. Add to each of three impingers 100 ml of 3 per cent hydrogen peroxide solution. Connect them with tubing inert to constituents of the sample stream in such a manner that the gas will be pulled from the sampling device at the stack through the impingers, then through the meter. Immerse the impingers in an ice bath. Sample at 0.5 cfm. The sampling time will depend on the concentration of sulfur oxides in the gas stream.

§ 9116 ANALYTICAL PROCEDURE. Rinse each of the absorbers and their connecting tubing into a 500-ml Erlenmeyer flask, using approximately 100 ml of rinse water. Bring to a boil and titrate with standard sodium hydroxide solution, using 4 ml of bromcresol green indicator solution. Titrate to the blue-color end point.

§ 9117 CALCULATION. Calculate the amount of sulfur oxides in the sample gas by the following equation:

Sulfur oxides, % by volume as $SO_2 = \frac{0.0417\ (AN_1)}{V}$

Where:

A = volume, milliliters, of standard alkali used in the titration.
N_1 = normality of the standard alkali solution.
V = volume of gas sample, cubic feet, at 60° F and 1 atm.

§9118 PRECISION. Duplicate results by the same operator on a given sample should not differ by more than 2 percent of the mean.

§9119 ALTERNATIVES. Other analytical techniques may be used for the determination of total sulfur oxides, provided that such techniques have been standardized against the prescribed technique.

~~CHAPTER 2 — CHEMICAL PROCEDURE FOR ATMOSPHERIC DETERMINATIONS OF SULFUR DIOXIDE~~

~~§9210 SCOPE. This method describes the procedure for the determination of SO_2 concentrations in the atmosphere to be used for the field calibration of recording sulfur dioxide instruments.~~

~~§9211 REAGENTS.~~

~~§9211.1 SODIUM TETRACHLOROMERCURATE 0.1 M. Mercuric chloride (0.1 mole, 27.2 gm) and 0.2 mole (11.7 gm) of sodium chloride are dissolved and diluted to one liter.~~

~~§9211.2 HYDROCHLORIC ACID-BLEACHED P-ROSANILINE. Dissolve 0.150 grams of p-rosaniline hydrochloride in 1 liter of 10 percent (v/v) hydrochloric acid. Let stand to stabilize for a few hours, preferably overnight, before use. This solution should be a pale yellow with a greenish tint.~~

~~§9216 REFERENCE. West, P. W. and G. C. Gaeke. "Fixation of Sulfur Dioxide as Disulfitomercurate (II) and Subsequent Colorimetric Estimation," *Anal. Chem*, *28*, 1816-19 (Dec., 1956).~~

CHAPTER 3 — DETERMINATION OF SULFUR TRIOXIDE IN SAMPLES TAKEN FROM GAS STREAMS

§ 9310 SCOPE. This method describes a procedure for the determination of SO_3 and H_2SO_4 in **exhaust gases.** The lower limit of the method is about 1 **ppm (vol)** of SO_3 for a 20 cubic foot sample.

§ 9311 INTERFERENCES. Particulate sulfates interfere, and should be removed by a glass wool filter maintained at stack temperature. If a significant quantity of sulfuric acid mist is removed by the filter, it shall be included in the final calculation. Ammonia, sulfur dioxide and nitrogen oxides do not interfere.

§ 9312 OUTLINE OF METHOD. SO_3 is absorbed in 80 per cent isopropanol. The sulfate formed is titrated with $BaCl_2$ using Thorin indicator.

§ 9313 APPARATUS. Sampling train shall consist of three Greenburg-Smith impingers, or other adequate absorbing devices, connected in series with tygon or similar tubing, each containing 100 ml 80 per cent isopropanol. These shall be followed by a millipore filter, an empty impinger, a dry meter, and a source of suction. During sampling, the impingers shall be partially immersed in an ice bath.

§ 9314 REAGENTS. Unless otherwise indicated, it is intended that all reagents conform to the specifications established by the Committee on Analytical Reagents of the American Chemical Society where such specifications are available; otherwise, use best available grade.

§ 9314.1 HYDROGEN PEROXIDE SOLUTION (SULFATE FREE). Hydrogen peroxide solution, 3 per cent. Prepare by diluting 30 per cent hydrogen peroxide with distilled water. Store in a dark-colored glass-stoppered bottle.

§ 9314.2 ISOPROPANOL. 80 per cent by volume. Add 400 ml of the alcohol to 100 ml water. Mix well.

§ 9314.3 BARIUM CHLORIDE - (0.1000N). Dissolve 6.100 grams of $BaCl_2 \cdot 2H_2O$ in 250 ml water. Add 250 ml isopropanol and mix well. Adjust the pH of the solution to 3.0 using 1-4 perchloric acid. Use a pH meter to measure pH.

§ 9314.4 PERCHLORIC ACID - 1 to 4. Add with caution 75 ml water to 25 ml 70 percent perchloric acid. Mix well.

§ 9314.5 THORIN INDICATOR ([0- (2-hydroxy-3.6 disulfo-1 naphthylazo) benzenearsonic acid disodium salt]). 0.2 grams in 100 ml water.

§ 9315 SAMPLING. Connect the sampling train to a probe and sample at approximately 0.5 cfm. The sampling time will depend on the concentration of SO_2 in the gas, but shall not be less than 15 minutes.

§ 9316 ANALYTICAL PROCEDURE. The analytical procedure should commence within 3 hours of the sample collection to minimize oxidation of SO_2. If a delay is anticipated, remove excess SO_2 by bubbling air through the train at 0.1 cfm for 5 minutes. The contents of the impingers are rinsed into a 500 ml volumetric flask with 80 percent isopropanol and diluted to 500 ml with the alcohol. Mix and transfer 25 ml to a 100 ml Erlenmeyer flask. Adjust the pH to 3.0 with 1 to 4 perchloric acid using a pH meter. Add 2 drops of Thorin indicator and titrate with the $BaCl_2$ solution to a salmon-pink end point. Any sulfuric acid collected on the millipore filter shall be included in the results.

§ 9317 CALCULATION. The sulfate equivalence of the $BaCl_2$ solution is checked by titrating against aliquots of standard 0.1000 N sulfuric acid in 80% isopropanol. One ml of 0.1000 N $BaCl_2$ is equivalent to 4.8 mg sulfate-ion.

Milligrams $SO_4^{=}$ = ml $BaCl_2$ x 4.8

Grains of 100% H_2SO_4 per **standard dry cubic foot** = $\frac{20 \times \text{mg } SO_4^{=}}{64.8\ V}$

Where V = volume of gas sampled, expressed in **standard dry cubic feet.**

~~CHAPTER 4 — SPECIFICATIONS FOR THE GAS CHROMATOGRAPH TO BE USED FOR DETERMINING HYDROCARBON CONCENTRATIONS IN § 4113 CHAPTER 1, DIVISION 4~~

~~§ 9410 The gas chromatograph used for the determination of hydrocarbons in connection with this regulation shall consist of an appropriate detection cell and column, contained in a suitable thermostatically controlled heated container, carrier gas and recorder: additional columns of appropriate lengths and compositions shall be used as necessary in each instance to determine whether the total concentration of saturated and unsaturated C_2 to C_4 hydrocarbons exceeds the concentration allowable under § 4113, Chapter 1, Division 4.~~

~~§ 9411 The determination of hydrocarbons by gas chromatography shall be based upon the following factors:~~

~~§ 9411.1 A mixture of gases is separated into its individual components as the mixture flows through a column containing an inert supporting material which has been wetted with an appropriate high boiling liquid.~~

~~§ 9411.2 The separation is enhanced by a stream of carrier gas which moves the mixture along the column.~~

~~§ 9411.3 The separated components are detected by a suitable detector placed at the end of the column.~~

DIVISION 11 — HYDROGEN SULFIDE

§ 11100 HYDROGEN SULFIDE. *(Added by Resolution 635, dated November 5, 1970.)*

§ 11101 No person shall cause, let, permit, suffer or allow any emission of hydrogen sulfide which results in ground level concentrations of hydrogen sulfide at any given point in excess of the following concentrations: 0.06 ppm (vol) averaged over 3 consecutive minutes or 0.03 ppm (vol) averaged over 60 consecutive minutes in any 24-hour period from midnight to the next succeeding midnight. § 11101 shall not apply to the ground level concentrations occurring on the property from which such emission occurs, provided such property, from the emission point to the point of any such concentration, is controlled by the person responsible for such emission.
(Added by Resolution 635, dated November 5, 1970. Amended by Resolution 674, dated July 22, 1971.)

§ 11102 Sampling of **exhaust gases** for hydrogen sulfide from **Type A emission points** shall follow the techniques prescribed in Division 9, Chapter 6, and sampling of **exhaust gases** for hydrogen sulfide from **Type B emission points** shall follow the techniques prescribed in Division 9, Chapter 7, or the Control Officer may require continuous monitoring in accordance with § 3210.1. Area monitoring of H_2S gas shall be according to the procedure outlined in Division 8, Chapter 8. *(Added by Resolution 635, dated November 5, 1970.)*

§ 11102.1 The person responsible for the **emission** of H_2S gas, which is or may be in excess of the limitations of § 11101, shall notify the control officer in writing of the location of all significant **emission points**, the location of the monitoring stations specified in §§ 11102.2 and 11102.3, and the nature of the **source operations** related to each such **emission**. *(Added by Resoluton 635, dated November 5, 1970.)*

§ 11102.2 Such person shall provide at least three recording H_2S monitoring stations located in the area surrounding the source, which stations shall be operated in accordance with the specifications of Chapter 8, Division 8. *(Added by Resolution 635, dated November 5, 1970.)*

§ 11102.3 Such **person** shall provide at least one recording meteorological station equipped to record wind speed and wind direction. *(Added by Resolution 635, dated November 5, 1970.)*

§ 11102.4 Such **person** shall provide the necessary care and maintenance services so that the instruments will function properly and adequately record H_2S exposures in the area. *(Added by Resolution 635, dated November 5, 1970.)*

§ 11102.5 Such **person** shall provide to the control officer a summary of the data obtained from such instruments during each calendar month. Such summary shall be in such form and detail as will show the degree of compliance with § 11101, and the time, location, extent, and duration of any recorded violation of the provisions of § 11101; shall include data giving the total mass rate of **emission** of H_2S from the **emission points** specified in § 11102.1, and a detailed report of instrument performance and maintenance; and shall be submitted within the calendar month immediately succeeding the recording of the data. *(Added by Resolution 635, dated November 5, 1907.)*

§ 11102.6 Such **person** shall keep for a period of at least two years all records gathered as a result of this § 11102, and shall make these available to the control officer at his request. *(Added by Resolution 635, dated November 5, 1970.)*

§ 11102.7 Such **person** shall examine at the time of each instrument maintenance check and in any case at intervals of no greater than every seven days instrument records taken pursuant to the requirements of this § 11102 to determine compliance with § 11101. Any recorded violation of § 11101 shall be reported to the control officer within the next normal working day after such examination. *(Added by Resolution 635, dated November 5, 1970.)*

§ 11102.8 Whenever the records indicate that a violation of § 11101 has occurred the **person** responsible for such **emission** must furnish evidence that proper action has been taken to prevent recurrence, or a violation of § 11101 will be deemed to have occurred. When instrument records are not adequate to show compliance with § 11101, the control officer may specify the schedule to be followed for producing a satisfactory record history. *(Added by Resolution 635, dated November 5, 1970.)*

DIVISION 14 — NITROGEN OXIDES

§ 141100 Nitrogen Oxides

§ 141111 No person shall cause, let, permit, suffer, or allow the emission of nitrogen oxides, calculated as nitrogen dioxide and calculated as if there were 3% oxygen in the exhaust gas stream, from any *new or modified* heat transfer operation, designed for a maximum heat input of more than 250,000,000 BTU per hour or greater in excess of:

§ 141111.1 125 ppm when gaseous fossil fuel is burned;

§ 141111.2 225 ppm when liquid fossil fuel is burned.

§ 141111.3 When different fossil fuels are burned simultaneously in any combination the applicable standard shall be determined by proration. Compliance shall be determined by using the following formula:

$$\frac{x\ (125)\ +\ y\ (225)}{x + y} = \text{allowable emission}$$

x is the percent of total heat input derived from gaseous fossil fuel, and

y is the percent of total heat input derived from liquid fossil fuel.

§ 141111.4 No person shall cause, let, permit, suffer, or allow the emission of nitrogen oxides, calculated as nitrogen dioxide and calculated as if there were 3% oxygen in the exhaust gas stream, from any heat transfer operation, designed for a maximum heat input of 1750,000,000 BTU per hour or greater in excess of:

§ 141111.5 175 ppm when gaseous fossil fuel is burned;

§ 141111.6 300 ppm when liquid fossil fuel is burned.

§ 141111.7 When different fossil fuels are burned simultaneously in any combination the applicable standard shall be determined by proration. Compliance shall be determined by using the following formula:

$$\frac{x\ (175)\ +\ y\ (300)}{x + y} = \text{allowable emission}$$

x is the percent of total heat input derived from gaseous fossil fuel, and

y is the percent of total heat input derived from liquid fossil fuel.

§ 141111.8 Sections 141111.4 through 141111.7 shall be in force and take effect on April 19, 1975.

§ 141112 A new heat transfer operation means any such operation that had not commenced on the effective date of this section. A modified heat transfer operation means an operation in which there has been any physical change in, or change in the method of operation of, a source operation which increases the amount of nitrogen oxides previously emitted, except that:

§ 141112.1 Routine maintenance, repair, and replacement shall not be considered physical changes, and

§ 141112.2 The following shall not be considered a change in the method of operation: (a) an increase in the production rate, if such increase does not exceed the operating design capacity of the operation: (b) an increase in hours of operation; (c) use of an alternative fuel if, prior to the date on which this section becomes effective, the operation was designed to accommodate such alternative fuel.

§ 141113 "Commenced" means that an owner or operator has undertaken a continuous program of construction or modification or that an owner or operator has entered into a binding agreement or contractural obligation to undertake and complete, within a reasonable time, a continuous program of construction or modification.

§ 141114 Determination of nitrogen oxides.

§ 141115 SCOPE. This method describes a procedure for the determination of nitrogen oxides in exhaust gases.

§ 141116 OUTLINE OF METHOD. The method is based on the absorption of nitric oxide and nitrogen dioxide in alkaline permanganate bubblers fitted with semi-fine frits. The formed nitrite and nitrate ions are determined by first converting the nitrite formed during the collection to nitrate. The total nitrate is then reduced to nitrite, which is determined by diazotation and coupling to form a red dye.

§ 141117 REAGENTS.

1. *Absorption Solution:* Dissolve 40 gms of potassium permanganate and 20 gms of sodium hydroxide in distilled water and dilute to 1 liter.
2. *Oxalic Acid:* 8% solution in distilled water.

3. *Sulfuric Acid:* 0.8 N: dilute 22.4 ml of conc. sulfuric acid to 1 liter with distilled water.
4. *Reducing and Color Reagent:* Nitra Ver IV, catalog No. 2013, Hach Chemical Co., Ames, Iowa.

§ 141118 SAMPLE COLLECTION. Sampling train consists of 3 Greenburg-Smith impingers modified with semi-fine frits of approximately 70 porosity. Each impinger shall contain 150 ml of absorbing solution. The impingers are connected in series, following by a dry meter and a source of suction. During sampling the impingers are immersed in an ice bath. Sampling rate shall be between 0.5 and 1.0 liters per minute. Sampling time shall be for 20-40 minutes, depending on the concentration of nitrogen oxides in the sample stream.

§ 141119 SAMPLE ANALYSIS. Measure total liquid volume collected in the impingers. Prepare an aliquot for analysis containing 10-100 μgm of nitrite. The aliquot may require dilution with unreacted absorption solution or may be used directly. The aliquot should not exceed 7.0 ml. If preferred, all three impingers may be combined to form a composite, thereby requiring only a single analysis.

Transfer aliquot to a graduated 50 ml erlenmeyer flask with screw cap top. Acidify with 0.8 N sufuric acid using 1 ml of acid per ml of aliquot, and let stand for 10 minutes. Heat sample to 50-60°C on a hot plate. Add oxalic acid solution, using 1 ml per ml of aliquot and add 0.5 ml excess. Let stand, shaking occasionally, until solution becomes colorless. This may take up to five minutes. Cool to room temperature and dilute to 30.0 ml mark with distilled water. A reagent blank containing 2.0 ml of absorption solution should be run with each batch of samples. Add to the samples and reagent blank one Nitro Ver pillow reagent and shake for 2 minutes on a mechanical shaker or by hand. Let stand for at least 5 minutes, but no longer than 30 minutes, and read in spectrophotometer at 525 mu with 10 mm cells, setting the reagent blank at 100% T.

§ 141120 PREPARATION OF STANDARD CURVE. Weigh and dissolve 0.220 gms of potassium nitrate in 1 liter of distilled water. Dilute 1-5 to make a working standard of 20 μgm NO_2/ml.

Prepare a series of standards containing 1, 2, 3, 4 and 5.0 ml of the standard solution added to 2.0 ml of the absorbing solution. Proceed as described under sample analysis to prepare standard curve.

§ 141121 CALCULATION.

$$\text{ppm NOx as } NO_2 = \frac{\text{Total } \mu\text{gm } NO_2 \text{ found}}{1.88 \times \text{sample volume (in liters)}}$$

(Adopted April 19, 1972.)

~~§ 15102 DEFINITIONS. For purposes of this Division 15:~~

~~(a) A source is defined so as to include but not be limited to any stack, chimney, vent, window, opening, lagoon, basin, pond, open tank, storage pile, or any discharge and/or application which emits odorous gas, gases or particulates, and~~

~~(b) odor-free air is defined as ambient air which has been filtered through activated carbon.~~

~~§ 15103 SOURCE LIMITATIONS FOR ANY ODOROUS SUBSTANCE. No person shall cause, let, permit, suffer, or allow a source to emit any odorous substance which remains odorous after dilution with odor-free air as specified in Table A.~~

~~TABLE A~~
~~DILUTION RATES~~

~~Elevation of Emission Point above Grade (Feet)~~	~~Dilution Rate (Volumes of odor-free air per volume of source sample)~~
~~Less than 30~~	~~1,000~~
~~30 to 60~~	~~3,000~~
~~60 to 100~~	~~9,000~~
~~100 to 180~~	~~30,000~~
~~Greater than 180~~	~~50,000~~

~~Samples shall be collected and analyzed as prescribed in Chapter 3 of this Division 15.~~

§ 15104 SOURCE LIMITATIONS FOR SPECIFIC ODOROUS COMPOUNDS. No person shall cause, let, permit, suffer, or allow the emission of any of the substances listed in Table B in concentrations exceeding those specified in Table B, except that this section shall not apply to kraft pulp mills.

TABLE B
MAXIMUM ALLOWABLE EMISSION CONCENTRATIONS IN PPM

Compound or Family of Compounds	Type A Emission Point	Type B Emission Point
Dimethylsulfide $(CH_3)_2S$	0.1	0.05
Ammonia NH_3	5000	2500
Mercaptans calculated as methylmercaptan CH_3SH	0.2	0.1
Phenolic compounds caculated as phenol C_6H_5OH	5.0	2.5
Trimethylamine $(CH_3)_3N$	0.02	0.01

Samples shall be collected and analyzed as prescribed in Chapter 2 of this Division 15.

~~§ 15105 OFF-PROPERTY LIMITATIONS FOR ANY ODOROUS SUBSTANCE. No person shall cause, let, permit, suffer, or allow the emission of any odorous substance which causes the ambient air at or beyond said person's property line to be odorous and to remain odorous subsequent to its dilution with 4 parts of odor-free air. Samples of ambient air shall be collected and evaluated as prescribed in Chapter 3 of this Division 15.~~

~~Ambient air, for purposes of this section, means the air surrounding persons or buildings beyond the property line of the person responsible for the emission of odorous substances.~~

§ 15106 LIMITATIONS FOR TOTAL REDUCED SULFUR AT KRAFT PULP MILLS. These Sections 15106.1 through 15106.8 shall apply only to kraft pulp mills as defined in Division 2 of Regulation 2.

§ 15106.1 The emission of TRS from any kraft recovery furnace shall not exceed 15 ppm (dry) as an average over the hours of operation in any operating day.

§15106.2 The emission of TRS from any kraft recovery furnace shall not exceed 40 ppm (dry) for more than 60 cumulative minutes in any operating day.

§ 15106.3 The combined emission of TRS from all kraft recovery furnaces shall not exceed in any operating day 0.3 pounds of TRS per ton of air-dried unbleached kraft pulp produced at the kraft pulp mill in that operating day.

§ 15106.4 The emission of TRS from any lime kiln shall not exceed 40 ppm (dry) as an average over any period of 60 consecutive minutes in any operating day.

§ 15106.5 The combined emission of TRS from all lime kilns shall not exceed in any operating day 0.15 pounds of TRS per ton of air-dried, unbleached kraft pulp produced at the kraft pulp mill in that operating day.

§ 15106.6 The emission of TRS from any source other than kraft recovery furnaces and lime kilns shall not exceed 15 ppm (dry) as an average over any period of 30 consecutive minutes.

§ 15106.7 The person responsible for emissions from any kraft pulp mill shall provide, install, maintain and continuously operate analytical instruments to monitor TRS emissions from each kraft recovery furnace and each lime kiln.

CHAPTER 2

(Originally enacted August 8, 1972 as Division 15;
re-enacted May 5, 1976 as Chapter 2, Division 15)

PROCEDURES FOR SAMPLING AND ANALYZING SPECIFIED ODOROUS COMPOUNDS

§ 15200 Determination of Specified Odorous Compounds as limited in § 15104. Analytical procedures described in this Chapter 2 are intended to facilitate the determination of concentrations for those compounds listed in Table B of § 15104.

Determination of Dimethylsulfide	(§ 15201)
Determination of Ammonia	(§ 15202)
Determination of Total Mercaptans	(§ 15203)
Determination of Total Phenols	(§ 15204)
Determination of Trimethylamine	(§ 15205)

§ 15201 DETERMINATION OF DIMETHYLSULFIDE IN SAMPLES TAKEN FROM GAS STREAM

§ 15201.1 **Scope.** This method describes a procedure for the determination of dimethylsulfide in exhaust gases.

§ 15201.2 **Outline of Method.** The sample is collected in a Tedlar bag of as least 10-liter capacity. The dimethylsulfide is then determined by gas chromatography using a flame photometric detector.

§ 15201.3 **Apparatus.** Sampling train consists of a Teflon-lined diaphragm pump followed by a 10-liter Tedlar* sampling bag. Connection between the pump and sampling bag should be kept to a minimum and should be of Teflon tubing.

§ 15201.4 **Gas Chromatograph Specifications.** The gas chromatograph to be used must be capable of detecting 10 ppb of dimethylsulfide with a peak height of at least 3 times the noise background at the attenuation being used. The instrument must have a gas sampling valve constructed of Teflon or other inert material to insure no loss of sulfur gases during transfer.

§ 15201.5 **Reagents.** Unless otherwise indicated, it is intended that all reagents conform to the specifications established by the Committee on Analytical Reagents of the American Chemical Society where such specifications are available; otherwise use best available grade.

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*Available from Thalco Inc., 6431 Flotilla Street, Los Angeles, Ca 90022

§ 15201.6 **Analytical Column.** A $30' \times \frac{1}{8}''$ Teflon, 5% poly-m-phenylether on 25-40 mesh fluoropak 80 + 0.05% H_3PO_4. The column material is prepared, packed and conditioned employing standard techniques.

§ 15201.7 **Sampling.** Connect a Teflon probe from the exhaust gas to the suction side of the pump described under apparatus, and connect the exhaust side of the pump to the sampling bag. Start pump and sample at approximately 0.5 liter/minute; this will permit at least 15 minutes of sampling time to fill a 10-liter bag.

§ 15201.8 **Analytical Procedure.** Connect the Tedlar bag sample to the inlet of the 10-ml gas sampling valve of the chromatograph. To the outlet side of the sampling valve connect a small diaphragm pump and draw sample through the sampling valve at a rate of 100 ml/minute for 3 to 4 minutes. Turn off pump and activate the sampling valve to transfer sample to the analytical column. The column conditions generally used are nitrogen: 40 ml/minute, and hydrogen: 150 ml/minute; air: 70 ml/minute and oxygen: 10 ml/minute. Using peak height or integrated area, calculate the concentration of dimethylsulfide in the sample,.using standard mixtures for comparison.

§ 15201.9 **Preparation of Standard.** Standards are prepared in Tedlar bags by filling with a known volume of purified air. During the filling, introduce into the air stream by means of a micro-syringe, a known volume of pure dimethylsulfide. Calculate ppb by the following equation:

$$\text{ppb} = \frac{\mu\text{l dimethylsulfide} \times 10^3}{\text{vol. of purified air (liters)}}$$

~~§ 15202 DETERMINATION OF AMMONIA IN SAMPLES TAKEN FROM GAS STREAMS~~

~~§ 15202.1 **Scope.** This method describes a procedure for the determination of ammonia in exhaust gases.~~

~~§ 15202.2 **Outline of Method.** The ammonia is absorbed in dilute acid solution. The absorbed ammonia is then reacted with Nessler's reagent to form a yellow color which is proportional to the ammonia content.~~

~~§ 15202.3 **Apparatus.** Sampling train consists of two Greenburg-Smith impingers, or with Tygon or similar tubing, each containing 100 ml of 0.1 N HCl. These shall be followed by a dry meter, and a source of suction. During sampling, the impingers shall be partially immersed in an ice bath.~~

~~§ 15202.4 **Reagents.** Unless otherwise indicated, it is intended that all reagents conform to the specifications established by the Committee on Analytical Reagents of the American Chemical Society where such specifications are available; otherwise, use best available grade.~~

~~**Hydrochloric Acid** — 0.1 normal~~

~~**Nessler's Reagent** — May be purchased already prepared, or if desired, prepare according to Snell and Snell "Colorimetric Methods of Analysis," Page 814, Vol. II, 3rd ed., 6th printing, D. Van Nostrand Co., 1957.~~

~~§ 15202.5 **Sampling.** Connect the sampling train to a probe and sample at approximately 0.5 cfm. The sampling time will depend on the concentration of ammonia in the gas stream.~~

~~§ 15202.6 **Analytical Procedure.** To 5.0 ml of sample or an aliquot brought to 5.0 with 0.10 N HCl and containing no more than 80 μgm of ammonia, add 14.0 ml of distilled water. Add 1.0 ml of Nessler's reagent and mix well. Read after 10 minutes in a spectrophotometer at 520 mμ using 10 mm cuvettes, after setting instrument at 100% transmittance with a reagent blank.~~

~~§ 15202.7 **Preparation of Standard Curve.** Weigh out exactly 0.3820 gms of ammonium chloride and dilute to 1 liter. This solution contains 100 μgm of ammonia N per ml. Dilute this standard 5:1 to obtain a working solution of 20 μgm N/ml. To a series of graduated 25 ml tubes add respectively 0, 1, 2 and 4.0 ml of diluted standard. To each add 5.0 ml of 0.10 N hydrochloric acid solution, and bring the volume of all solutions to 19.0 ml with distilled water. Add 1.0 ml of Nessler's reagent, mix, and read in spectrophotometer as described under procedure. Prepare a graph of transmittance vs. concentration.~~

~~§ 15202.8 **Calculation:**~~

$$\text{ppm (vol.)} = \frac{\text{total micrograms nitrogen in sample}}{0.53 \times \text{sample volume (liters)}}$$

§ 15203 DETERMINATION OF TOTAL MERCAPTANS IN SAMPLES TAKEN IN GAS STREAMS

§ 15203.1 **Scope.** This method describes a procedure for the determination of total mercaptans in exhaust gases.

§ 15203.2 **Outline of Method.** The mercaptans are absorbed in a mercuric acetate solution. The absorbed mercaptans are then treated with N, N-dimethyl-p-phenylene-diamine in the presence of ferric ion to form a red color which is proportional to the mercaptan content.

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§ 15203.3 Apparatus. Sampling train consists of 2 Greenburg-Smith impingers or other adequate absorbing devices, each containing 100 ml 5% mercuric acetate. The impingers are connected in series, followed by a dry meter and a source of suction. During sampling the impingers are immersed in an ice bath.

§ 15203.4 Reagents. Unless otherwise indicated, it is intended that all reagents conform to the specification established by the Committee on Analytical Reagents of the American Chemical Society where such specifications are available; otherwise, use best available grade.

Mercuric Acetate Solution, 5%—Dissolve 50 gm of mercuric acetate in approximately 400 ml of water and 10 ml glacial acetate acid. Dilute to 1 liter.

Amine Solution—Dissolve 5.0 gm of N, N-dimethyl-p-phenylene diamine hydrochloride in 1 liter of concentrated hydrochloric acid. When protected from light the solution is stable for at least six months.

Reissner Solution—Dissolve 67 gm of ferric chloride hexahydrate in distilled water, dilute to 500 ml and mix with 500 ml nitric acid solution containing 72 ml of concentrated nitric acid.

Color Developing Reagent—To three volumes of the amine solution add one volume of Reissner solution and mix. This solution should be prepared fresh for each set of determinations.

§ 15203.5 Sampling. Connect the sampling train to a probe and sample at approximately 0.5 cfm. The sampling time will depend on the concentration of mercaptan in the gas stream.

§ 15203.6 Analytical Procedure. Transfer 20.0 ml of sample to a 25-ml graduated tube. Add 2 ml of freshly prepared color-developing reagent, dilute to the 25-ml mark and mix well. After 30 minutes read at 500 $m\mu$ with 25 mm cuvettes after setting instrument at 100% T with a reagent blank. From standard curve read micrograms of mercaptan.

§ 15203.7 Preparation of Standard Curve. Weigh out 156.6 mg of crystalline lead methyl mercaptide, dilute to 100 ml with 5% mercuric acetate. The solution contains 500 μgm CH_3SH/ml. Dilute this solution with mercuric acetate solution to give a working standard of 10 μgm CH_3SH/ml. To a series of graduated 25-ml tubes add respectively 0, 1, 3 and 5 ml of diluted standard, bring each tube to approximately the 20.0-ml mark with 5% mercuric acetate. Develop color as described under analytical procedure, and prepare calibration curve.

DIVISION 16—SULFUR CONTENT OF FUELS

A person shall not burn any liquid or solid fuel having a sulfur content in excess of 0.5% by weight.

The provisions of this rule shall not apply to:

(a) The burning of sulfur, hydrogen sulfide, acid sludge or other compounds used in the manufacture of sulfur or sulfur compounds.

(b) The use of liquid or solid fuels to propel any motor vehicle, aircraft, missile, boat or ship.

(c) The use of liquid or solid fuels which do not cause the emission of more than 300 parts per million (by volume) of sulfur dioxide from any source operation.

Compliance with this regulation shall not exempt any person from the requirements of Section 3121 of Regulation 2, or any other applicable Sections of Regulations 2 or 3. *(Division 16 added May 19, 1976)*

~~DIVISION 18—ASPHALT AIR BLOWING~~

~~A person shall not operate or use any article, machine, equipment or other contrivance for the air blowing of asphalt unless all gases, vapors and gas-entrained effluents from such an article, machine, equipment or other contrivance are:~~

~~(a) Incinerated at temperatures of not less than 1400 degrees Fahrenheit for a period of not less than 0.3 seconds, or~~

~~(b) Processed in a manner which is equally or more effective than (a) above for the purpose of air pollution odor control, as determined by the Air Pollution Control Officer or by experimental operations under provisions of Section 1214 of this regulation.~~

~~A person incinerating or processing gases, vapors or gas-entrained effluents pursuant to this rule shall provide, properly install and maintain in calibration, in good working order and in operation devices as specified by the Air Pollution Control Officer for indicating temperature, pressure or other operating conditions. *(Division 18 added May 19, 1976)*~~

DIVISION 19

SULFUR DIOXIDE LIMITATION ON NEW SULFUR PLANTS

No person shall permit the emission of more than 300 parts per million (hourly average) (by volume) of sulfur dioxide corrected to zero percent oxygen from any source operation constructed after the date of adoption of this Division 19 which manufactures sulfur using as a principal raw material any sulfur containing material. Source operations emitting less than 100 pounds per day of sulfur dioxide shall not be subject to this limitation.

Compliance with this Division 19 shall not exempt any person from the requirements of Section 3121 of Regulation 2, or any other applicable sections of District regulations. *(Adopted November 3, 1976.)*

BAY AREA AIR POLLUTION CONTROL DISTRICT

Adopted

September 7, 1977

Amendment to Regulation 2

Continuous Emission Monitoring

~~§ 3210.5(A) Definitions for terms used in § 3210.5 - § 3210.11 shall be those given in 40 CFR Part 51, or equivalent ones established by mutual agreement of the control district, Air Resources Board, and Environmental Protection Agency.~~

§ 3210.5(B) Notwithstanding the requirement of Section 3210.1, the Air Pollution Control Officer shall require the person responsible for emissions from the following source operations to install, calibrate, operate, and maintain all monitoring equipment necessary for continuously monitoring the quantity of air pollutants specified below:

(a) NO_x, CO_2, or O_2, and opacity from steam generators with a heat input of 250 million British Thermal Units or more per hour and with a use factor of at least 30 percent, unless an exemption is granted in accordance with the following.

Upon written application by the owner or operator of a subject source, the Control Officer may grant an exemption from the requirements of this paragraph if the owner or operator demonstrates that the 30 percent use factor is exceeded on account of drought conditions. Any such exemption shall not extend beyond December 31, 1979. The Control Officer shall promptly inform the Executive Officer of the Air Resources Board of any such application received and approval granted.

(b) NO_x from all new nitric acid plants, and existing plants having a production capacity in excess of 300 tons/day as 100% nitric acid.

(c) SO_2 from sulfuric acid plants.

(d) SO_2 from sulfur recovery plants emitting more than 100 pounds per day of SO_2.

(e) SO_2 and opacity from the CO boilers of the regenerators of fluid catalytic crackers.

(f) SO_2 and opacity from the CO boilers of the regenerators of fluid cokers with a feed rate greater than 10,000 barrels per day; and

(g) SO_2 from fossil fuel fired steam generators with a heat input of 250 million British Thermal Units or more per hour with a use factor of at least 30 percent and utilizing flue gas desulfurizing (FGD) units, unless the exemption described in Section 3210.5(B)(a) applies.

§ 3210.6 The in-stack monitoring systems required under Section 3210.5(B) shall be installed in a location deemed proper by the Air Pollution Control Officer to be representative of the true emissions of the pollutant being measured.

§ 3210.7 The in-stack monitoring systems required under 3210.5(B) which are also required under 40 CFR Part 51, Appendix P shall meet the performance specification requirements outlined in 40 CFR Part 51, Appendix P or equivalent specifications established by the Air Pollution Control Officer, ARB, and EPA.

§ 3210.8 In-stack monitoring systems for NO_x and SO_2 required by Section 3210.5(B) shall be calibrated when installed using accepted EPA source testing methods or their equivalent to insure a relative error of 20 percent or less. Data developed in the calibration shall be provided to the Air Pollution Control Officer for his review and determination of its accuracy.

§ 3210.9 A violation of any applicable emission standards recorded by the monitoring systems specified in 3210.5(B) shall be reported to the APCO wihtin 96 hours by the person responsible for the emissions.

§ 3210.10 The APCO shall report violations received under 3210.9 to the Air Resources Board within 5 working days after receiving the report of the violation from the person responsible for the emissions.

(c) Time and date of each period during which the continuous monitoring system was inoperative except for zero and span checks and the nature of system repairs and adjustments;

(d) A negative declaration when no excess emissions occurred; and

(e) Reports on opacity monitors giving the number of three-minute periods during which the average opacity exceeded the standard for each hour of operation. Averages may be obtained by integration over the averaging period or by arithmetically averaging a minimum of four equally spaced instantaneous opacity measurements per minute. In lieu of the foregoing reports based on average opacity, the APCO may require that reports on opacity monitors give the number of one-minute periods during which the opacity exceeded the standard for each hour of operation. Any time period exempted shall be considered before determining the excesses.

The requirements of Sections 3210.2 through 3210.4 shall apply to source operations included in Section 3210.5(B).

The effective date of Sections 3210.5 and 3210.8 shall be March 3, 1977.

By June 3, 1976, all sources which are affected by this section shall notify the Air Pollution Control Officer in writing of the plans and specifications for installation of the required monitors.

By September 3, 1976, the sources affected shall notify the Air Pollution Control Officer in writing of purchase orders submitted to appropriate vendors for the purchase of the required monitors.

By December 3, 1976, the sources affected shall install and begin testing the monitors required in this section.

By March 3, 1977, the sources required to install monitors shall be in full compliance with Section 3210.5(B).

The effective date of Sections 3210.7, 3210.8, 3210.9, 3210.10, and 3210.11, and new monitoring requirements under 3210.5(B) shall be May 31, 1977.

BOSTON, MASSACHUSETTS

REGULATION 2

2.1 No person shall, unless otherwise allowed by the Massachusetts Department of Environmental Quality Engineering, cause or permit the use, in the City of Boston, of fuel which contains more than the following percentage of sulfur by weight:

a. Bituminous coal - .36 per cent;
b. Residual fuel oil - .5 per cent.

The determination of sulfur content shall be by the method of the American Society for Testing and Materials.

REGULATION 4

4.1 Regulation 4 shall apply to all fuel-burning equipment using distillate fuel oil or gas having a rated capacity of more than 500,000 Btu per hour.

4.2 No person shall cause, suffer, allow or permit the emission of smoke, from fuel-burning equipment subject to Regulation 4, which has a shade, density, or appearance greater than smoke spot number 2 of the Standard Smoke Scale, as measured in accordance with the standard method of test of the American Society for Testing and Materials, ASTM D2156-65.

4.3 Any person owning, leasing, or otherwise controlling the operation of any fuel-burning equipment subject to Regulation 4 shall annually cause to be made such adjustments or maintenance as may be required to comply with this regulation. A certified statement of the maximum smoke density (Standard Smoke Scale) observed after such adjustments or maintenance shall be posted on said equipment. The said statement shall also show the date of observation and identify the person so certifying, who shall be a combustion facility technician as certified by the Commonwealth of Massachusetts Department of Environmental Quality Engineering, or shall hold an equivalent certification by the Department of Public Safety, or shall otherwise be acceptable to the Commission.

4.4 The provisions of Regulation 4 shall not relieve any person of any obligation or duty to comply with any other law, statute, code, regulation, or ordinance of the Federal Government, Commonwealth of Massachusetts, and City of Boston.

Opacity Limitations

17-2.3. (a) It shall be unlawful within the city of Chicago, and within one mile of the corporate limits thereof, for any person, owner, agent, operator, firm or corporation to permit, to cause, suffer or allow the emission of any smoke from any source whatever of a density, shade or opacity greater than that described as No. 1½ on the Ringelmann Chart, as published by the United States Bureau of Mines, provided that the following exceptions to the provision of this section shall be permitted for fuel-burning, combustion or process equipment:

(1) For a period or periods aggregating 4 minutes in any 30 minutes of a density, shade or opacity equal to but not greater than that described as No. 2 on the Ringelmann Chart. Except emissions of water and water vapor shall not apply to emissions under this provision.

(2) For a period or periods aggregating 4 minutes in any 60 minutes of a density, shade or opacity equal to but not greater than that described as No. 3 on the Ringelmann Chart when building a new fire, banking fires, and soot blowing.

(b) Determination of violations of Section 17-2.3(a).

(1) By qualified certified smoke reader through visual observation.

(2) By the use of a calibrated smoke evaluation device approved by the Commissioner.

(3) By the use of a smoke monitor located in the stack with recording devices attachment approved by the Commissioner.

(c) The Commissioner may require any person, owner, agent, operator, firm or corporation whom he believes to be in violation of this Section 17-2.3 to provide a smoke monitor which shall be installed in such a manner that it will continuously monitor the density of smoke emission from the stack in question. Measurements of the smoke monitor shall be automatically transmitted to a recording device capable of maintaining a record of the data, which shall be made available to the Commissioner upon request.

The provisions of this section shall not apply to the provisions of Section 17-2A.3 of this Code.

17-2.5

The following provisions shall be applicable to all processes and equipment in addition to the limits upon the emission of smoke and particulate matter contained in Sections 17-2.3 and 17-2.4 hereof:

(3) Sulfur Limits in Fuel

(a) No person within the city of Chicago or within one mile of the corporate limits thereof shall cause or permit the use, or, if intended for use in the city of Chicago or within one mile of the corporate limits thereof, the purchase, sale, offer for sale, storage or transportation of fuel, which, as determined by the Methods of the American Society for Testing and Materials, contains more than the following percentages of sulfur by weight in the following use classifications:

(i) All new space heating equipment, the plans for which are 50% or more completed by July 1, 1970, shall be limited to the use of fuels containing no more than 1.0% of sulfur by weight.

(ii) All existing space heating equipment shall be limited to the use of fuels containing not more than 2.0% of sulfur by weight on and after July 1, 1970, to and including August 31, 1971; shall be limited to the use of fuels containing no more than 1.25% of sulfur by weight on and after September 1, 1971, to and including August 31, 1972; and shall be limited to the use of fuels containing no more than 1.0% of sulfur by weight on and after September 1, 1972.

(iii) All new and existing industrial power plants and process plants shall be limited to the use of fuels containing no more than 2.0% of sulfur by weight from and after July 1, 1970, to and including October 31, 1970; shall be limited to the use of fuels containing no more than 1.5% of sulfur by weight from and after November 1, 1970, to and including August 31, 1972; and shall be limited to the use of fuels containing no more than 1.0% of sulfur by weight on and after September 1, 1972.

(iv) All new and existing electric power generating plants shall be limited to the use of fuels containing no more than 1.8% of sulfur by weight on and after July 1, 1970, to and including December 31, 1971; and shall be limited to the use of fuels containing no more than 1.0% of sulfur by weight on and after January 1, 1972.

(b) Upon the application of any person engaged in the operation of fuel-burning equipment, the commissioner with the approval of the appeal board may issue a certificate of operation in accordance with Section 17-2.41 of this chapter in those cases wherein the applicant shall establish that the fuel-burning equipment is operated in such a manner or is equipped with such control apparatus as to continually prevent the emission of any sulfur compound or compounds in amounts greater than those that would be emitted from the burning (in the same fuel-burning equipment without such control apparatus) of fuel containing any amount of sulfur by weight not in excess of the maximum amount permitted at the applicable time by this section.

(c) On and after July 1, 1970, and until the requirements of subparagraphs (a) or (b) of this subsection (3) are met, no fuel burning installation generating electrical power shall burn a fuel or fuels having a higher average sulfur content than the fuel or fuels used in such installation during each of the twelve calendar months prior to July 1, 1970, based on a comparable BTU content. For the purpose of determining compliance with this provision, the average sulfur content of all fuel or fuels used during each of the calendar months prior to July 1, 1970, shall be determined by averaging the sulfur content of all fuel used during each calendar month, on the basis of pounds of sulfur per million BTU's heating value of the fuel or fuels, which shall not be exceeded in any calendar month from and after July 1, 1970, when compared with the same calendar month of the previous year, and determined upon the same averaging basis.

(d) The provisions of subparagraph (3) (a) of this section shall not apply to acts performed with respect to fuel owned or under contract for purchase by a purchaser who uses or intends to use such fuel in any fuel-burning equipment for which a Certificate of Operation has been issued under subparagraph (3) (b), or where a variance has been granted pursuant to the provisions of Section 17-2.55(c) of this chapter.

(4) Sulfur Dioxide Concentration

No person shall cause or permit the emission into the atmosphere from any new or existing source gases containing more than 500 parts per million by volume of sulfur dioxide nor more than 15 milligrams per cubic meter of sulfuric acid or sulfur trioxide, or any combination thereof; provided, however, that the foregoing limitations shall not apply to those emissions in which both fuel is burned primarily to produce heat, and the sulfur compound emission is due primarily to the sulfur in the fuel burned.

(5) Hydrogen Sulfide Concentration

No person shall cause or permit the emission into the atmosphere from any new or existing source of hydrogen sulfide in such manner and amounts that the concentrations thereof at the stack exceed a concentration of 0.01 parts per million by volume for a maximum period of one hour at any time.

17-2.5

(6) **Methods for sampling air to detect the presence of sulfur compounds shall be as follows:**

(a) The method of measuring sulfur trioxide and sulfuric acid or any combination thereof in stack gases shall be:

Particulates (H_2SO_4 — Acid Mists)

Atmospheric Emissions from Sulfuric Acid Manufacturing Processes, Ref. Public Health Service Publication 999-AP-13 (1965), Appendix B, pp. 85-7. (Modified Monsanto Company Method) or in accordance with Federal Register, Vol. 36, No. 247. December, 1971.

Gaseous (SO_2 — SO_3)

Atmospheric Emissions from Sulfuric Acid Manufacturing Processes, Ref. Public Health Service Publication 99-AP-13 (1965), Appendix B, pp. 85-7. (Shell Development Company Method) or in accordance with Federal Register, Vol. 36, No. 247, December, 1971.

(b) The method of measuring hydrogen sulfide in the ambient atmosphere shall be:

(1) Lead-Acetate-Impregnated Filter Paper Procedure.

Ref. Sensenbaugh, J. D., and Hemeon, W. C. L.: A Low Cost Sampler for Measurement of Low Concentration of Hydrogen Sulfide. Air Repair 4:5 (May, 1954).

(2) Methylene Blue Method.

Ref. Stern, A. C., Ed. — "Air Pollution," Vol. II, Second Edition (1968), pp. 78, 79 and 80.

(3) Federal Register, Vol. 36, No. 247, Method H, December, 1971.

(c) The method of measuring sulfur dioxide in stack gases shall be:

Gaseous (SO_2 — SO_3)

Atmospheric Emissions from Sulfuric Acid Manufacturing Process, Ref. Public Health Service Publication 999-AP-13 (1965), Appendix B, pp. A1-5. (Shell Development Company Method)

(d) The method of measuring sulfur trioxide and sulfuric acid or any combination thereof suspended in the ambient atmosphere shall be:

Particulates (H_2SO_4)

Ref. Commons, B. T., Determination of Particulate Acid in Town Air, Analyst, 88, 364-67 (May, 1963).

SECTION 24-15

No person shall cause, let, permit, suffer or allow to be discharged into the atmosphere from any single source of emission whatsoever, any air contaminant for more than three (3) minutes in any hour which at the emission point is:

(a) Equal to or greater than the density that is designated as Number Two on the Ringlemann Chart as published in the U.S. Bureau of Mines Information Circular No. 7718. Other standards may be used to measure smoke density which give results equivalent or comparable to those obtained using said chart, if such standards of measurement are approved by and acceptable to the director, environmental resources management.

(b) Of such opacity as to obscure an observer's view to a degree equal to or greater than Number Two on the Ringlemann Chart. (Ord. No. 67-95, § 1, 12-19-67; Ord. No. 75-27, § 11, 5-7-75)

SECTION 24-17

(1) Ambient air quality standards. No person, firm, corporation, or other entity shall cause, let, permit, suffer or allow any emission of sulfur dioxide which would exceed the following standards in any part of Dade County:

(a) Annual arithmetic mean—8.6 micrograms per cubic meter (0.003 parts per million);

(b) Twenty-four-hour concentration—28.6 micrograms per cubic meter (0.010 parts per million);

(c) Four-hour concentration—57.2 micrograms per cubic meter (0.020 parts per million);

(d) One-hour concentration—286 micrograms per cubic meter (0.100 parts per million).

(2) Emission standards. No person, firm, corporation or other entity shall cause, let, permit, suffer or allow the emission of gas cotaining sulfur dioxide from any fossil fuel steam generator with more than two hundred fifty million Btu per hour heat input located in Dade County and exceeding the following standards:

(a) New sources subsequent to the effective date of this section [Ordinance No. 76-52]:

(i) 0.8 pound per million Btu heat input, maximum two-hour average, when liquid fuel is burned;

(ii) 1.2 pounds per million Btu heat input, maximum two-hour average, when solid fuel is burned.

(b) Existing sources on the effective date of this section [Ordinance No. 76-52]:

(i) 1.1 pounds per million Btu heat input, maximum two-hour average, when liquid fuel is burned;

(ii) 1.5 pounds per million Btu heat input, maximum two-hour average, when solid fuel is burned.

(3) New and existing fossil fuel steam generators with two hundred fifty million or less Btu heat input located in Dade County are required to apply standards compatible with latest technology as determined by the director of environmental resources management, if said technology as may be applied to air pollution sources results in or is expected to result in lower or improved air pollution emission standards.

(4) Sampling and testing.

(a) All persons shall, upon request of the department, provide continuous automatic monitoring, testing and records of contaminants being emitted from a source;

(b) All persons shall provide facilities for continuously determining the input process weight or input heat when such factors are the basis for limiting standards;

(c) Any person, firm, corporation or other entity responsible for the emission of air pollutants from any source shall, upon request of the department, provide in connection with such sources and related source operations, such sampling and testing facilities exclusive of instruments and sensing devices as may be necessary for the proper determination of the nature and quantity of air pollutants which are, or may be emitted as a result of such operation;

(d) Such facilities may be either permanent or temporary at the discretion of the person responsible for their provision and shall be suitable for the use of methods and equipment acceptable to the department, who shall indicate in writing the required size, number and location of sampling holes; the size and location of the sampling platform; and the utilities for operating the sampling and testing equipment. The facility shall comply with all applicable laws and regulations concerning safe construction and safe practices in connection with such facility;

(e) When the department, upon investigation, has good reason to believe that the provisions of this section concerning emission of pollutants are being violated, it may require the person, firm, corporation or other entity responsible for the source of pollutants to conduct tests which will identify the nature and quantity of pollutant emissions from the source and to provide the results of said tests to the department. These tests shall be carried out under the supervision of the department, and at the expense of the person responsible for the source of pollutants;

(f) All analyses and tests shall be conducted in a manner specified by the department. Results of analyses and tests shall be calculated and reported in a manner specified by the department;

(g) Analyses and tests for compliance may be performed by the department at the cost of the person responsible for the emission of air pollutants. (Ord. No. 67-95, § 1, 12-19-67; Ord. No. 75-27, § 12, 5-7-75; Ord. No. 76-52, §§ 1, 2, 6-1-76)

1.5

.5-1. **Emissions from Stationary Sources.** No person shall emit any air contaminant(s) from stationary sources which exceed(s) twenty percent (20%) opacity, provided however, that the provisions of this section 710.5-1. shall not apply to (a) gasoline or diesel powered engines for which standards are provided in sections 710.5-2 and 710.5-3, or (b) emissions from fireplaces and non-commercial barbecues, or (c) boiler emissions from soot blowing or fuel changing operations which do not exceed a period or periods aggregating more than three (3) minutes in any sixty (60) consecutive minutes.

.7

.7-1. **Stack Emission Concentration.** No person shall emit from any single source, a concentration of sulfur dioxide in excess of five hundred (500) parts per million based on volume.

AIR POLLUTION CONTROL REGULATIONS
JEFFERSON COUNTY, KENTUCKY

AIR·POLLUTION·CONTROL DISTRICT

adopted: July 14, 1976

effective: September 1, 1976

These regulations supersede all Jefferson County Air Pollution Control Regulations adopted prior to July 14, 1976. They are adopted under provisions of the air pollution control statutes of the Commonwealth of Kentucky, K.R.S. Chapter 77 and K.R.S. Chapter 224 as amended.

Air Pollution Control District
of Jefferson County
914 East Broadway
Louisville, Kentucky 40204
(502) 587-3327

Preceding page blank

(24) "Open Burning" means the burning of any matter in such a manner that the products of combustion resulting from the burning are emitted directly into the ambient air without passing through a stack or chimney;

(25) "Owner or Operator" means any person who owns, leases, operates, controls, or supervises one or more affected facilities;

(26) "Particulate Matter" means any material, except uncombined water, which exists in a finely divided form as a liquid or a solid;

(27) "Person or Persons" means any individual, public or private corporation, political subdivision, government agency, municipality, industry, copartnership, association, firm, trust, estate, or other entity whatsoever;

(28) "Reference Method" means any method of sampling and analyzing for an air pollutant as prescribed in the following United States Environmental Protection Agency Regulations: Standards of Performance for New Stationary Sources (40 CFR 60); Standards of Performance for Hazardous Pollutants (40 CFR 61); and National Primary and Secondary Ambient Air Quality Standards (40 CFR 50);

(29) "Run" means the net period of time during which an emission sample is collected. Unless otherwise specified, a run may be either intermittent or continuous within the limits of good engineering practice;

(30) "Source" means one or more affected facilities contained within a given contiguous property line. The property shall be considered contiguous if separated only by a public thoroughfare, stream, or other right of way;

(31) "Stack or Chimney" means any flue, conduit, or duct arranged to conduct emissions to the atmosphere;

(32) "Standard Conditions":

(a) For source measurements means 21.1 degrees Celsius (70 degrees Fahrenheit) and a pressure of 760 mm Hg (29.92 in. of Hg);

SECTION 8. MONITORING, RECORDING, AND REPORTING

(1) The District shall require the owner or operator of the following affected facilities to install, use, and maintain stack gas monitoring and measuring equipment in accordance with such methods as the United States Environmental Protection Agency and the District shall prescribe, to establish and maintain records of same, and to make periodic emission reports at intervals prescribed by the District:

(a) Indirect heat exchangers of more than 250 million BTU per hour;

(b) Nitric acid plants;

(c) Sulfuric acid plants;

(d) Petroleum refineries;

(e) Storage vessels of volatile organic materials with a capacity of 40,000 gallons or greater;

(f) Sewage treatment plants.

(2) The District may require the owner or operator of any other affected facility to install, use, and maintain stack gas monitoring and measuring equipment in accordance with such methods as the United States Environmental Protection Agency and the District shall prescribe, to establish and maintain records of same, and to make periodic emission reports at intervals prescribed by the District.

(3) The owner or operator of any affected facility for which a standard is prescribed in these regulations shall when required by the District install, use, and maintain ambient air monitoring equipment in accordance with such methods as the United States Environmental Protection Agency and the District shall prescribe, and in such number and frequency as the District shall prescribe, and shall make periodic ambient air monitoring reports at intervals prescribed by the District.

(4) The District may require the owner or operator of any affected facility to install, use, and maintain additional monitoring or measuring equipment in accordance with such methods as the United

States Environmental Protection Agency or the District shall prescribe, to establish and maintain records of same, and to make periodic reports at intervals prescribed by the District.

SECTION 9. EMISSIONS DURING SHUTDOWN AND MALFUNCTION

(1) Emissions which, due to shutdown or malfunction, temporarily exceed the standard set forth by the District shall be deemed in violation of such standards unless the requirements of this section are satisfied and the determinations specified in Subsection (6) of this section are made.

(2) Planned Shutdown: When emissions during any planned shutdown and ensuing startup exceed the standards, the owner or operator of the affected facility shall notify the District by telephone no later than 3 days before the planned shutdown. However, if the shutdown is necessitated by events which the owner or operator could not reasonably have foreseen 3 days before the shutdown, then such notification shall be given as promptly as possible following the determination to shutdown and in no event later than 2 hours following the determination to shutdown. If the emissions exceed the standard for a period in excess of 4 hours, the owner or operator of the affected facility shall send written notice to the District no later than the end of the next working day following the fourth hour of excess emissions.

Such notice shall contain the following information in the order specified:

(a) The name of the air contaminant source and affected facility;

(b) Its location;

(c) The address and telephone number of the person responsible for the source;

(d) The reasons for and duration of the shutdown;

(e) The nature of the action to be taken during shutdown;

(f) The date and time for the action;

(g) The physical and chemical composition, rate, and concentration of the emissions during such shutdown and ensuing startup;

(h) The basis for determination that such shutdown is necessary; and

(i) The measures which will be taken to minimize the extent and duration of the emissions during such shutdown and ensuing startup.

(3) Malfunction: When emissions due to malfunction (or to unforeseen shutdown associated with malfunction) are or may be in excess of the standards, the owner or operator of the affected facility shall as promptly as possible and in no event later than two hours following the start of the malfunction notify the District by telephone. If it is anticipated that the malfunction will continue for a period in excess of 48 hours, the owner or operator of the affected facility shall send written notice to the District no later than the end of the next working day following the start of the malfunction. Such notice shall specify:

(a) The name of the source and affected facility;

(b) Its location;

(c) The address and telephone number of the person responsible for the source;

(d) The nature and cause of the malfunction;

(e) The date and time when such malfunction was first observed;

(f) The expected duration;

(g) The nature of the action to be taken to correct the malfunction; and

(h) An estimate of the physical and chemical composition, rate, and concentration of the emission.

(4) Within 10 days after the termination of a breakdown or malfunction continuing for a period in excess of 4 hours, the owner or operator shall submit a report detailing:

(a) The time the excess emissions began and ended;

(b) The time of the beginning and end of the breakdown or malfunction which is asserted to be the cause of the excess emissions;

(c) An estimate of the physical and chemical composition, rate, and concentration of emissions which occurred and where continuous monitoring is required or is in effect (including visible emission detector), the strip charts with plots of all emissions monitored versus time, including a summary of the monitoring instruments; written records shall be expressed in units of the applicable standard;

(d) An explanation and, where appropriate, an engineering analysis of the cause of the malfunction or breakdown;

(e) A description of those operating and/or maintenance procedures and practices in use prior to and during the occurrence which were designed to prevent or minimize the extent and duration of the malfunction or breakdown;

(f) Any other steps taken to minimize the extent or duration of the malfunction or breakdown;

(g) An analysis of what steps will be taken to prevent or minimize similar occurrences in the future; and

(h) Such additional information as the District may require.

The District may, for good cause, waive or extend the time periods for filing the report required by this subsection.

(5) If the specified time necessary to correct the unlawful emissions should exceed 10 days, then, upon receipt of such letter, the District shall immediately cause such letter to be brought to the chairman of the Hearing Board. The Hearing Board may consider granting a variance in accordance with the provisions of Air Pollution Control Regulation I, Section 10. Notification of completion of corrective actions must still be made by telephone to the District.

(6) Nothing in this section shall relieve a source from compliance with the standards set forth by the District unless the District determines that:

(a) The occurrence in question did not result from the failure of the owner or operator of the source to operate and maintain the equipment properly;

(b) All reasonable steps were taken to correct, as expeditiously as practicable, the conditions causing the emissions to exceed the standards, including the use of off-shift labor and over-time if necessary, and;

(c) All reasonable steps were taken to minimize the emissions resulting from the occurrence.

(7) In cases where malfunctions are of a repetitious nature, the District shall require the owner or operator to submit a written program outlining a time schedule and corrective actions which will result in a permanent solution to the problems.

While the District reserves the right to continually evaluate and require corrections of malfunctions, when more than 12 failures of the same or similar pieces of equipment occur in a twelve-month period, the District shall evaluate the failures to determine if corrective actions will be required.

(8) The District shall notify the owner or operator of the affected facility of the determination required by this section no later than 60 days after the date that all information required by this section has been submitted. Failure of the District to give such notification within a 60 day period shall have the same effect as a determination that the occurrence is deemed not to be a violation of the standards.

(9) Nothing in this section shall be construed to restrict the District's discretion to take, at any time, appropriate enforcement action under K.R.S. 77.240, if upon information supplied to the District pursuant to this section, or otherwise available to the District, the District determines that such action is necessary to protect public health or welfare.

facility, or from any air pollution control equipment installed on any affected facility, any gases which may contain particulate matter which:

(i) Is equal to or greater than 20 percent opacity; or,

(ii) Is in excess of the quantity specified in Table A of this regulation.

(b) An affected facility may elect to substitute the following standards in lieu of the value given in Table A:

(i) A maximum exit particulate emission concentration of 0.02 grains per standard cubic foot; and

(ii) Air pollution control equipment of at least 97 percent actual efficiency.

(iii) Addition of dilution air shall not constitute compliance.

(c) Subsection (a) shall not apply to any affected facility having a process weight rate less than 1000 pounds/hour which meets all the following requirements:

(i) The emission rate does not exceed 2.58 pounds per hour;

(ii) The affected facility has an operating permit issued by the District and currently in effect; and

(iii) The particulate emission control equipment on the facility has been in operation for less than five years.

(4) Standard for Nitrogen Oxides

No owner or operator subject to the provisions of this regulation shall cause to be discharged into the atmosphere from any affected facility or from any air pollution control equipment installed on any affected facility, any NOx fumes in excess of:

(a) 300 ppm by volume, expressed as NO_2; or

(b) an invisible discharge.

SECTION 3. STANDARDS OF PERFORMANCE FOR PROCESS GAS STREAMS

(1) Applicability

The provisions of this section shall apply to petroleum refineries, by-product coke plants, and any other processes which were in being or under construction before April 19, 1972.

(2) Definitions

(a) "Process Gas" means any gas generated by or employed in a process operation or process unit not specifically defined elsewhere within these regulations.

(b) Terms used in this section not defined herein shall have the meaning given them in Regulation I.2.

(3) Standard for Hydrogen Sulfide

No owner or operator subject to the provisions of this regulation shall cause the emission of H_2S in a process gas stream to exceed 10 grains per 100 cubic feet of gas.

(4) Standard for Sulfur Dioxide

No owner or operator subject to the provisions of this regulation shall cause the emission of sulfur dioxide in a process gas stream to exceed 2000 parts per million by volume.

SECTION 4. STANDARDS OF PERFORMANCE FOR INDIRECT HEAT EXCHANGERS

(1) Applicability

The provisions of this section are applicable to each indirect heat exchanger of 1 million or more BTU per hour heat input which was in being or under construction before April 19, 1972. The combined total heat input capacity of all affected facilities shall be used to determine the total allowable emissions from a source regardless of boiler or stack configuration.

(2) Definitions

(a) "Indirect Heat Exchanger" means any piece of equipment, apparatus, or contrivance used for the combustion of fuel in which the energy produced is transferred to its point of usage through a medium that does not come in contact with or add to the products of combustion.

(b) Terms used in this section not defined herein shall have the meaning given them in Regulation I.2.

(3) Standard for Particulate Matter

(a) No owner or operator subject to the provisions of this section shall cause to be discharged into the atmosphere from any affected facility any gases which contain particulate matter in excess of the quantity specified in Table B.

(b) No owner or operator subject to the provisions of this section shall cause the emission into the open air of particulate matter from any indirect heat exchanger which is greater than 20 percent opacity.

(c) The provisions of Subsection (b) shall not apply to:

(i) Emissions into the open air of particulate matter from any indirect heat exchanger during building a new fire, cleaning the fire box, or blowing soot for a period or periods aggregating not more than 10 minutes in any 60 minutes which are less than 40 percent opacity;

(ii) Emissions from waterwall spreader-stoker indirect heat exchangers during startup operations if the emissions do not exceed the following limits:

a. first 30 minutes - 80 percent opacity

b. next hour - 60 percent opacity

c. next 2-1/2 hours - 40 percent opacity;

(iii) Emissions up to 40 percent opacity from all other waterwall indirect heat exchangers for any 30-minute period during startup operations.

TABLE B

MM BTU/HOUR HEAT INPUT	MAXIMUM PARTICULATE EMISSION RATES POUNDS PER MILLION BTU INPUT
10 or less	0.56
50	0.38
100	0.33
250	0.26
500	0.22
1000	0.19
2500	0.15
5000	0.13
7500	0.12
10000 or more	0.11

Interpolation of allowable emissions for intermediate heat input values not specified in the tables above may be accomplished by use of the equation shown below for the appropriate fuel and heat input range specified. In all equations X = millions of BTU per hour heat input and Y = allowable particulate emissions in pounds per million BTU heat input.

$$Y = 0.963\,X^{-0.2356}$$

(4) Standard for Sulfur Dioxide

(a) No owner or operator subject to the provisions of this regulation shall cause to be discharged into the atmosphere from any affected facility any gases which contain sulfur dioxide in excess of the weights listed in Table C below:

TABLE C
ALLOWABLE SULFUR DIOXIDE EMISSIONS BASED ON HEAT INPUT CAPACITY

MM BTU/Hour Heat Input	Pounds SO_2 per million BTU Heat Input Liquid or Gaseous Fuel	Solid Fuel
10 or less	1.0	4.0
50	1.0	2.2
100	1.0	1.7
150	1.0	1.4
200	0.9	1.3
250 or more	0.8	1.2

Interpolation of allowable emissions for intermediate heat input values not specified in the table above may be accomplished by use of the equations on the next page for appropriate fuel and heat input specified:

Liquid or Gaseous Fuel: $Y = 7.22\,X^{-0.4106}$

Solid Fuel: $Y = 9.46\,X^{-0.3740}$

Where Y = allowable sulfur dioxide emissions in pounds per million BTU per hour heat input, and

X = millions of BTU per hour heat input capacity rating.

(b) When different fuels are burned simultaneously in any combination, the applicable standard shall be determined by proration using the following formula:

Allowable sulfur dioxide emission in pounds per million BTU per hour heat input =

$$\frac{y(a) + z(b)}{y + z}$$

Where:

y is the percent of total heat input derived from liquid fuel;

z is the percent of total heat input derived from solid fuel;

a is the allowable sulfur dioxide emission in pounds per million BTU heat input derived from liquid fuel; and

b is the allowable sulfur dioxide emission in pounds per million BTU heat input derived from solid fuel.

(c) Compliance shall be based on the total heat input from all fuels burned, including gaseous fuels.

SECTION 5. STANDARDS OF PERFORMANCE FOR INCINERATORS

(1) Applicability

The provisions of this section shall apply to each incinerator in being or under construction before April 19, 1972, which is the affected facility.

(2) Definitions:

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SECTION III

B. Visible Emissions

1. **No person shall permit, cause, suffer or allow the discharge into the atmosphere from any incinerator any visible emission except uncombined water for a period of more than thirty (30) consecutive seconds in any one hour or an aggregate of more than three (3) minutes in any calendar day which is equal to or greater than twenty (20) percent opacity, or for any period which is equal to or greater than sixty (60) percent opacity.**
2. **No person shall permit, cause, suffer or allow the discharge from any incinerator of any visible flyash into atmosphere.**
3. **Trained employees certified by the Department may make observations to determine compliance with the above provision without direct reference to standards.**

PHILADELPHIA

SECTION IV

1. No person shall discharge into the atmosphere from any single source of emission whatsoever any air contaminant, except uncombined water,

   a. for a period or periods aggregating more than three minutes in any one hour which

      (1) is equal to or darker in shade than that designated as No. 1 on the Ringelmann Chart, as published by the U.S. Bureau of Mines, or

      (2) is equal to or darker than a comparable standard using such other charts or devices as the Department determines to be equivalent thereto; or

   b. for any period, which is equal to or darker than No. 3 on the Ringelmann Chart, or its equivalent; or

   c. of such opacity as to obscure an observer's view to an equal or greater degree than either (a) or (b) above;

   d. The provisions of (a) above, do not apply to incinerators. Incinerators are regulated under the provisions of Air Management Regulation XI, Control of Emissions from Incinerators.

2. The provisions of (1) above shall apply to visible emissions of air contaminants that are white, black, shades of grey or colored.

3. Trained employees certified by the Department may make observations to determine compliance with the provisions of (1) and (2) above without direct reference to standards.

REGULATION III - SECTION 3-207

(a) On and after the effective dates listed therein no fuel merchant shall store, offer for sale, sell, deliver for use of exchange in trade, for use in Philadelphia, and no person shall use commercial fuel oils which contain sulfur in excess of the percentages by weight set forth in the following table:

		Percent Sulfur by Weight		
Grades of Commercial Fuel Oil	SSU Viscosity at 100°F	Effective 5-1-70	Effective 10-1-72	Effective *4-1-78* [10-1-77]
No. 2 and lighter	Less than or equal to 45	0.3%	0.3%	0.2%
No. 4	Greater than 45 but less than 145	0.7%	0.4%	0.3%
No. 5, No. 6 and heavier	Equal to or greater than 145	1.0%	0.5%	0.3%

(b) The provisions of (a) above shall not apply in any case in which it is demonstrated to the Department that sulfur dioxide emissions, caused by the combustion of commercial fuel oils, from any stack or chimney into the outdoor atmosphere, can be controlled to levels that, on and after the effective dates listed herein, do not exceed at any time those quantities of sulfur dioxide, expressed in pounds per one (1) million BTU gross heat input, set forth in the following table;

Grades of Commercial Fuel Oil	SSU Viscosity at 100°F	Permissible SO_2 Emissions (Pounds SO_2 per Million BTU (Gross Heat Input) Effective 5-1-70	Effective 10-1-72	Effective *4-1-73* [10-1-77]
No. 4	Greater than 45, but less than 145	0.74 lbs.	0.42 lbs.	0.30 lbs.
No. 5, No. 6 and heavier	Equal to or greater than 145	1.1 lbs.	0.52 lbs.	0.30 lbs.

* * *

Explanation:
Italics indicate new matter added.
[Brackets] indicate matter deleted.

PHILADELPHIA

REGULATION III - SECTION 3-207

(2) *Non-Commercial Fuel*

(a) No person shall cause, suffer, allow or permit sulfur dioxide, caused by the combustion of non-commercial fuel or the combustion of non-commercial and commercial fuel mixtures, to be discharded from any stack or chimney into the outdoor atmosphere at any time in excess of 640 ppm by volume adjusted to twelve (12) percent carbon dioxide by volume; and. on and after October 1, 1973, no person shall cause, suffer or allow or permit sulfur dioxide, caused by the combustion of non-commercial fuel or the combustion of non-commercial and commercial fuel mixtures, to be discharged from any stack or chimney into the outdoor atmosphere at any time in excess of 310 ppm by volume adjusted to twelve (12) percent carbon dioxide by volume, or equivalent method approved by the Department.

SECTION II

B. Except as provided in Section 3-207 of Title 3, no person shall cause or permit the emission of oxides of sulfur from a specific source or process in excess of 0.1 per cent by volume. Within two years, the emission rate shall be limited to 0.05 per cent by volume. Dilution or diffusion of exhaust gases is not an acceptable means of meeting this requirement.

REGULATION VII - SECTION III

A. No person shall permit, cause, suffer or allow the discharge into the atmosphere of nitrogen oxides from a Nitric Acid plant in excess of three (3) pounds per ton of acid produced, maximum two (2) hour average.

B. No person shall permit, cause, suffer or allow a visible emission to the atmosphere of air contaminants from a Nitric Acid plant.

C. Nitrogen Oxides shall be expressed as nitrogen dioxide (NO_2).

PUGET SOUND

(WASHINGTON)

SECTION 9.03

(b) After July 1, 1975, it shall be unlawful for any person to cause or allow the emission of any air contaminant for a period or periods aggregating more than three (3) minutes in any one hour, which is:

(1) Darker in shade than that designated as No. 1 (20% density) on the Ringelmann Chart, as published by the United States Bureau of Mines; or

(2) Of such opacity as to obscure an observer's view to a degree equal to or greater than does smoke described in Subsection 9.03 (b) (1); provided that, 9.03 (b) (2) shall not apply to fuel burning equipment utilizing wood residue when the particulate emission from such equipment is not greater than 0.05 grain per standard cubic foot.

SECTION 9.07

(b) It shall be unlawful for any person to cause or permit the emission of air contaminant from equipment if the air contaminant emitted as measured in the flue contains sulfur dioxide in concentrations greater that 2,000 ppm.

Tests for determining compliance with Subsection 9.07(b) shall be based on integrated samples collected over a period of not less than fifteen (15) consecutive minutes or ninety percent (90%) of the time of actual source operation, whichever is less.

(d) It shall be unlawful for any person to burn, sell or make available for sale any fuel containing a weight percentage of sulfur in excess of:

(1) Two percent (2%) for all oil except as provided for hereinafter in Section 3 and 4.

(2) One percent (1%) for coal.

(3) Three-tenths of a percent (0.3%) for Distillate No. 1 oil (ASTM D-396-69).

(4) Five-tenths of a percent (0.5%) for Distillate No. 2 oil (ASTM D-396-69).

Except that when flue gas desulfurization equipment is used, higher sulfur content fuel may be sold if the resulting stack concentration of sulfur dioxide shall not be greater than that which would have occurred by burning the fuel described in 9.07 (d)(1), (2), (3) and (4).

ST. LOUIS

SECTION 16

A. Restrictions Applicable to Existing Installations.

1. Except as provided in Paragraph C, no person shall discharge into the atmosphere from any existing single source of emission whatsoever any air contaminant of a shade or density equal to or darker than that designated number 2 on the Ringelmann Chart, or

2. Of such opacity as to obscure a qualified observer's view to a degree equal to or greater than does smoke described in subparagraph A.1. of this Section.

3. This subsection A shall not apply to incinerators.

B. Restrictions Applicable to New Installations and All Incinerators.

1. Except as provided in paragraph C, no person shall discharge into the atmosphere from any incinerator or any new single source of emission whatsoever any air contaminant of a shade or density equal to or darker than that designated as number 1 on the Ringelmann Chart, or

2. Of such opacity as to obscure a qualified observer's view to a degree equal to or greater than does smoke described in paragraph B (1) of this Section.

SECTION 18

A. General Provisions.

1. This Section shall apply to any installation in which fuel is burned and in which the sulfur dioxide emission is primarily due to the sulfur content of the fuel burned, and in which the fuel is burned primarily to produce heat.

2. For purposes of this Section, a "fuel burning installation" is any single fuel burning furnace or boiler or other unit, device, or contrivance in which fuel is burned or any grouping of two or more such furnaces or boilers or other units, devices, or contrivances on the same premises or otherwise located in close proximity to each other and under control of the same person. The capacity of such installations shall be the manufacturer's or designer's guaranteed maximum heat input rate, whichever is greater.

3. The method for determining the percent of sulfur in coal shall be that described in ASTM D-271-64, as set forth in Appendix A. Laboratory Sampling and Analysis of Coal and Coke or equivalent method approved by the Commissioner.

The method for determining the heat content of coal shall be described in ASTM:D-271-64 Laboratory Sampling and Analysis of Coal and Coke or D-2015-62T Gross Calorific Value of Solid Fuel by the Adiabatic Bomb Calorimeter as set forth in Appendix A.

All coal analyses and heat contents are to be calculated on a dry basis. The method for determining the sulfur content of fuel oil shall be that described in ASTM: D-129-62 Standard Method of Test for Sulfur in Petroleum Products by the Bomb Method, as set forth in Appendix A.

The method for determining the heat content of fuel oil shall be that described in ASTM: D-240-64 Standard Method of Test for Heat of Combustion of Liquids by the Parr Bomb Calorimeter, as set forth in Appendix A, or other method giving comparable results.

4. The Commissioner or his authorized representative is authorized to take samples of any fuel by any appropriate means for the sampling of the quantity which he finds, at any reasonable time or place, for purposes of determining compliance with this regulation. Where applicable, the following methods will be used as set forth in Appendix A.

For coal:

ASTM: D-492-48 Sampling Coal Classified According to Ash Content

ASTM: D-2013-65T Preparing Coal Sample for Analysis

ASTM: D2234-65T Mechanical Sampling of Coal

For oil:

ASTM: D-270-65 Sampling Petroleum and Petroleum Products.

B. Restrictions Applicable to Fuel Burning Installations with a Capacity of 2,000 Million or More British Thermal Units per hour.

1. On and after November 1, 1972 or such earlier date as may be required by the Missouri Air Conservation Commission, no person shall cause or permit the emission of sulfur dioxide to the atmosphere from any fuel burning installation with a capacity of 2.000 million or more British Thermal Units per hour in an amount greater than 2.3 pounds of sulfur dioxide per million British Thermal Units of heat input to the installation.

2. On or after October 1, 1968, until April 1, 1969, and during the same months every year thereafter, no person shall burn or permit the burning, in any fuel burning installation, with a capacity of 2,000 million or more BTU's per hour of any coal containing more than Two (2.0) percent sulfur or of any oil containing more than Two (2.0) percent sulfur, unless it can be shown that subsection B.1 of this Section will not be violated thereby.

3. Any fuel burning installation with a capacity of 2,000 million or more British Thermal Units per hour shall employ the use of suitably high stacks for the emission of sulfur dioxide to the atmosphere, as approved by the Commissioner.

4. On and after the effective date of this regulation and until the requirements of subsection B (1) of this regulation are met, no fuel burning installation with a capacity of 2,000 million or more British Thermal Units per hour shall burn a fuel or fuels having a higher average sulfur content than the fuel or fuels used in such installation during the 12 months prior to the effective date of this ordinance based on a comparable BTU content. For purposes of determining compliance with this subsection B.4, the average sulfur content of all fuel or fuels used for the 12 month period to the effective date of this ordinance shall be determined by averaging the sulfur content of all fuel used during such period, on the basis of pounds of sulfur per million British Thermal Units heating value of the fuel or fuels. This computed average sulfur content shall not be exceeded during any 12 month period after the effective date of this ordinance, when determined on the same averaging basis.

Persons responsible for installations subject to subsection B of this Section shall furnish the Commissioner or his authorized representative the records, charts, readings and data associated with such fuel burning installations as he may reasonably require to determine whether an installation is being operated in compliance with this subsection B. of this Section.

5. It shall be the duty of the Council to advise the Commissioner and the Board of Aldermen on the extent to which the air quality goals for sulfur oxides are being met, the state of advancement of technology for the removal or control of sulfur oxide emissions from fuel burning installations and the availability of fuels with a lesser sulfur content. The Council shall then develop plans and recommend schedules for the application of technology and any further or different restrictions on fuel composition as it believes are necessary and feasible to further reduce the sulfur oxide content of the ambient air.

C. Restrictions Applicable to Fuel Burning Installation with a Capacity of less than 2,000 Million British Thermal Units Per Hour.

1. On and after October 1, 1968 until April 1, 1969, and during the same months every year thereafter no person shall burn or permit the burning of any coal containing more than Two (2.0) percent sulfur or of any fuel oil containing more than Two (2.0) percent sulfur, in any fuel burning installation having a capacity of less that 2.000 Million British Thermal Units per hour.

2. The limitations on sulfur in fuel in subsection 1 of this subsection C shall not apply if a person can show that emissions of sulfur dioxide to the ambient air from an installation will not exceed 2.3 pounds of sulfur dioxide per million British Thermal Units of heat input to the installation.

D. Method of Calculating Sulfur Content of Coal.

All stated values for sulfur in coal used in this section are for analyses conducted on a dry basis but calculated to include normal moisture.

SECTION 18

E. Unlawful Conduct.

No person shall use or consume any fuel which does not meet the requirements of this section unless the provisions of subsection B,1, or C,2, are met. No person shall import, sell, offer for sale, expose for sale, exchange, deliver, or transport for use and consumption in the City of Saint Louis any coal which he knows that the recipient thereof is going to use or consume in violation of this section.

F. Exception to Washed Coal Requirements.

The requirements for washing of coal shall not apply if a person proposing to use unwashed coal can show that the emission of sulfur dioxide from the burning of such unwashed coal will be no more than 2.3 pounds of sulfur per million British Thermal Units of heat input and that emission of particulate matter will be no more than allowed by this ordinance.

G. Sampling and Testing of Solid Fuels.

1. The method for determining ash, sulfur and volatile content of solid fuels shall be as described in ASTM: D-271-64 Laboratory Sampling and Analysis of Coal and Coke as set forth in Appendix A or equivalent method approved by the Commissioner.

2. The Commissioner or his authorized representative may take samples of any solid fuel at any reasonable time or place for purpose of determining compliance with this ordinance.

SECTION 21

A. Testing Methods.

1. The method of measuring sulfur trioxide and sulfuric acid or any combination thereof in stack gases shall be as described in "Atmospheric Emissions from Sulfuric Acid Manufacturing Processes," Public Health Service Publ. 999-AP-13, Pages 61-66 and 85-87, as set forth in Appendix G.

2. The method of measuring hydrogen sulfide in the ambient atmosphere shall be that described in the paper entitled "A Low Cost Sampler for Measurement of Low Concentrations of Hydrogen Sulfide," by Sensenbaugh and Hemeon and published in Air Repair, Volume 4, May, 1954, as set forth in Appendix H.

3. The method of measuring sulfur dioxide in stack gases shall be as described in "Atmospheric Emissions from Sulfuric Acid Manufacturing Processes," Public Health Service Publ. 999-AP-13, Pages 85-87, as set forth in Appendix G.

4. The method of measuring sulfur trioxide and sulfuric acid or any combination thereof suspended in the ambient atmosphere shall be as described in the paper entitled "Determination of Particulate Acid in Town Air," by B. T. Commins and published in the Analyst, Volume 88, May, 1963, as set forth in Appendix I.

B. Concentration of Sulfur Compounds in Emissions Restricted.

1. No person shall cause or permit the emission into the ambient air from any existing source, except those in which both fuel is burned primarily to produce heat and the sulfur compound is due primarily to the sulfur in the fuel burned, gases containing more than two thousand (2000) parts per million by volume of sulfur dioxide or five hundred (500) parts per million by volume of sulfur dioxide from any new such source.

2. No person shall cause or permit the emission into the ambient air any existing source specified herein gases containing more than seventy (70) milligrams per cubic meter of sulfuric acid or sulfur trioxide or any combination thereof or thirty five (35) milligrams per cubic meter of sulfuric acid, sulfur trioxide or any combination thereof from any new such source expressed as sulfuric acid.

3. Where a source operation which would or does emit sulfur compounds to the atmosphere is a scavenger plant or recovery plant, recovering sulfur compounds which would otherwise be emitted to the atmosphere and such scavenger plant is not a sulfuric acid manufacturing operation, the Commissioner may authorize the operation of such recovery plant where the total emission of sulfur compounds is reduced by [illegible] least 95 percent with the plant in operation compared to emissions when it is not operating, even though the concentrations of sulfur compounds in emissions to the atmosphere exceed those permitted by subsection B-1 or B-2 of this Section.

C. Emission of Sulfur Compounds in Certain Amounts and Manner Restricted.

1. No person shall cause or permit the emission of sulfur dioxide from any premises in such manner and amounts that the concentrations and frequencies attributable to such emission exceed those shown in the following table in the ambient air at any place beyond the premises on which the source is located.

Concentration*	Averaging Time	Maximum Allowable Frequency
0.25 ppm or more	5 minutes	Once in any 8 hours
0.10 ppm or more	1 hour	Once in any 4 days
0.05 ppm or more	24 hours	Once in any 90 days

*Parts per million by volume.

2. No person shall cause or permit the emission of sulfuric acid or surfur trioxide or any combination thereof from any premises in such manner and amounts that the concentrations and frequencies attributable to such emission exceed those shown in the following table in the ambient air at any place beyond the premises on which the source is located.

Concentration* of sulfuric acid or sulfur trioxide or any combination thereof	Average time	Maximum allowable frequency
0.03 mg/m^3 or more	30 minutes or more	Once in 48 hours
0.01 mg/m^3 or more	24 hours	Once in any 90 days

*Milligrams per cubic meter at standard conditions, measured and calculated as 100% surfuric acid.

3. No person shall cause or permit the emission of hydrogen sulfide from any premises in such manner and amounts that the concentration attributable to such emissions in the ambient air at any occupied place beyond the premises on which the source is located exceed a concentration of 0.03 parts per million by volume for any averaging period of 30 or more minutes on more than two occasions in any 5 consecutive day period, or 0.05 parts per million by volume for any averaging period 30 or more minutes more than two times per year.

D. In any area in which multiple sources cause the concentrations in the ambient air to exceed the standards of paragraphs 1, 2 or 3 of subsection C, then the standards set out in paragraphs 1, 2 or 3 of subsection C allowable for each person shall be decreased proportionately so that the total concantrations in the ambient air do not exceed the said standards contained in the above described paragraphs.

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT*

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*Please note: The South Coast Air Quality Management District officially replaced the former Southern California Air Pollution Control District on February 1, 1977. The rules contained in this document were adopted by the former Southern California Air Pollution Control Board. State law, however, specifies that the rules of the former Air Pollution Control District shall remain in effect for the new South Coast Air Quality Management District until such time as they are superseded by action of the new District Board.

Rule 214. Denial of Permits (Adopted January 9, 1976

In the event of denial of a permit, the Air Pollution Control Officer shall notify the applicant in writing of the reasons. Service of this notification may be made in person or by mail. Such service may be proven by the written acknowledgment of the persons served or affidavit of the person making the service. The Air Pollution Control Officer shall not accept a further application unless the applicant has complied with the objections specified by the Air Pollution Control Officer as the reasons for denial of the permit.

Rule 215 Permits Deemed Denied. (Adopted January 9, 1976)

The applicant may at his option deem the permit denied if the Air Pollution Control Officer fails to act on the application for permit within 30 days after filing, or within 30 days after the applicant furnishes further information, plans and specifications requested by the Air Pollution Control Officer, whichever is later.

Rule 216. Appeals. (Adopted January 9, 1976)

The applicant may petition the Hearing Board in writing within 10 days after receipt of notification from the Air Pollution Control Officer of the denial of a permit or the conditions of operation imposed on the permit. The Hearing Board shall hold a public hearing within 30 days after receiving the petition. The Hearing Board may sustain or reverse the action of the Air Pollution Control Officer. The Hearing Board order may be made subject to specified conditions.

Rule 217. Provision for Sampling and Testing Facilities. (Adopted January 9, 1976)

The Air Pollution Control Officer may require the applicant or permittee to provide and maintain such facilities as are necessary for sampling and testing. In the event of such requirements, the Air Pollution Control Officer shall notify the applicant in writing of the required size, number and location of sampling ports; the size and location of the sampling platform; the access to the sampling platform, and the utilities for operating the sampling and testing equipment. The platform and access shall be constructed in accordance with the General Industry Safety Orders of the State of California.

Rule 218 Stack Monitoring (Revised April 1, 1977)
(Revised August 5, 1977)

(a) Definitions - Definitions used shall be those given in 40 CFR, Part 51, or equivalent ones established by mutual agreement of the District, Air Resources Board and Environmental Protection Agency.

(b) Stack Monitoring Requirements Based on Emissions - The Air Pollution Control Officer may require a person to provide, properly install, maintain in calibration, in good working order and in operation, a continuous stack monitoring system to measure air contaminants when

that person installs, operates or uses any equipment which emits 900,000 kilograms (992 tons) per year of carbon monoxide (CO) or 90,000 kilograms (99 tons) per year or more of any air contaminant except carbon monoxide (CO). The Air Pollution Control Officer shall report to the Air Pollution Control Board in writing when he requires the installation of a stack monitoring system under the provisions of this subsection.

(c) Stack Monitoring Requirements Based on Equipment Categories - A person shall provide, properly install, maintain in calibration, in good working order and in operation, continuous stack monitoring systems to measure the following emissions.

- **(1) Oxides of nitrogen (NO_x) and carbon dioxide (CO_2) or oxygen (O_2) from steam generators with a heat input of 63 million kilogram calories (250 million British Thermal Units) or more per hour and with a use factor of at least 30 percent per year.**
- **(2) Sulfur dioxide (SO_2) from steam generators with a heat input of 63 million kilogram calories (250 million British Thermal Units) or more per hour and with a use factor of at least 30 percent per year if control equipment is used.**
- (3) Oxides of nitrogen (NO_x) from all new nitric acid plants. Oxides of nitrogen (NO_x) from all existing nitric acid plants with a production capacity greater than 272,160 kilograms (300 tons) per day expressed as 100 percent acid.
- (4) Gaseous sulfur compounds calculated as sulfur dioxide (SO_2) from sulfuric acid plants, sulfur recovery plants equipped with oxidizing tail gas units, carbon monoxide boilers of regenerators of fluid catalytic cracking units, new fluid cokers and existing fluid cokers with a feed rate greater than 1,590,000 liters (10,000 barrels) per day.

(d) Approved Monitoring Systems - A stack monitoring system required to be installed by this rule shall be of a type specified by the California Air Resources Board pursuant to Section 42702 of the Health and Safety Code, or of a type approved by the Air Pollution Control Officer.

(e) Performance Standards for Monitoring Systems -

- (1) Stack Monitoring systems shall be installed, calibrated, maintained and operated in accordance with the following sections of 40 CFR:
  - (a) Fossil-Fuel Fired Steam Generators: Section 60.45.
  - (b) Sulfuric Acid Plants: Section 60.84.
  - (c) Nitric Acid Plants: Section 60.73.
  - (d) Petroleum Refineries: Section 60.105.
- (2) Calibration gas mixtures shall meet the specifications in 40 CFR, Part 51, Appendix P, Section 3.3, and Part 60, Appendix B, Performance Specification 2, Section 2.1.
- (3) Stack monitoring system cycling times shall be those specified in 40 CFR 51, Appendix P, Sections 3.4.2.
- (4) Continuous sulfur dioxide (SO_2) and oxides of nitrogen (NO_x) monitors shall meet the applicable performance specification requirements in 40 CFR, Part 51, Appendix P, and Part 60, Appendix B.
- (5) Continuous carbon dioxide (CO_2) and oxygen (O_2) monitors shall meet the performance specification requirements in 40 CFR, Part 51, Appendix P, and Part 60, Appendix B.

(6) Performance standards equivalent to those specified in this subsection may be established by mutual agreement of the District, the Air Resources Board and the Environmental Protection Agency.

(f) Reqiurements for data - The records of the data obtained from the recording devices of the stack monitoring system, specified in Subsections (b) and (c), shall clearly indicate concentrations and/or emission rates as specified by the Air Pollution Control Officer. These records shall be maintained by such person for a period of two years and shall be made available, upon request. to the Air Pollution Control Officer and the State Air Resources Board.

All records of the occurrence and duration of any start up, shutdown or malfunction, performance test, evaluation, calibration, adjustment and maintenance of the stack monitoring instruments shall be maintained for review.

(g) Summaries of Emission Data - A person operating a stack monitoring system, specified in Subsection (b) and (c) shall provide a summary of the emission data obtained from such systems. The summary of the data shall be submitted monthly in the form and manner prescribed by the Air Pollution Control Officer. The summary shall be available for public inspection at the office of the Air Pollution Control District.

(h) Reports of Excessive Emissions

(1) A person operating a stack monitoring system specified in Subsection (b) and (c) shall report violations of the emission standards of these rules, as shown by the stack monitoring system, to the Air Pollution Control Officer within 96 hours.

(2) The reports specified in Subsection (h) (1) shall include the following:

(a) Time intervals, date and magnitude of excess emissions; nature cause of the excess (if known), corrective actions taken and preventive measure adopted.

(b) Averaging period used for data reporting corresponding to averaging period specified in the emission test period used to determine compliance with an emission standard for the pollutant/source category in question.

(c) Time and date of each period during which the continuous monitoring system was inoperative except for zero and span checks and the nature of system repairs and adjustments.

(d) The data reported shall be reduced according to the procedure established in 40 CFR, Part 51, Appendix P, paragraphs 5.0 through 5.3.3, or by other methods deemed equivalent by joint decision of the District, Air Resources Board and Environmental Protection Agency.

(i) Notification of Monitoring System Breakdown

(1) A person operating or using a stack monitoring system required by this rule shall notify the Air Pollution Control Officer within 48 hours in the event of monitoring equipment shutdown or a breakdown of 60 consecutive minutes.

(2) In the case of the breakdown or shutdown of the stack monitoring equipment, compliance with the provisions of Subsections (b) and (c) is waived for a period not to exceed 96 consecutive hours. Such waiver is extended only if a petition for an interim or emergency variance is filed in accordance with Regulation V and shall terminate at the time that the Hearing Board grants or denies such variance petition.

(j) Inspection of Monitoring Systems - The Air Pollution Control Officer may inspect as he

determines to be necessary, the monitoring system required by this rule to ensure that such devices are located and functioning properly.

(k) Effective Dates

(1) This rule is effective upon the date of adoption for all equipment except as provided in Subsection (2) below.

(2) The owner or operator of any equipment subject to the provisions of Subsection (c), which is completed and put into service prior to the date of adoption, shall comply with these provisions by February 1, 1977, except for the provisions listed in Subsection (3).

(3) The provisions of the subsections listed below shall become effective on October 1, 1978:

(a)
(c) (2)
(c) (3)
(e) (1)
(e) (2)
(e) (3)
(e) (4)
(e) (5)
(e) (6)
(h) (2)

(4) The requirement for stack monitors in sulfur recovery plants to become effective October 1, 1978.

Revised April 1, 1977

RULE 401. Visible Emissions

(a) A person shall not discharge into the atmosphere from any single source of emission whatsoever any air contaminant for a period or periods aggregating more than three minutes in any one hour which is:

(1) As dark or darker in shade as that designated No. 1 on the Ringelmann Chart, as published by the United States Bureau of Mines, or

(2) Of such opacity as to obscure an observer's view to a degree equal to or greater than does smoke described in subsection (a) of this rule.

(b) This rule shall not apply to coke ovens except for the stacks.

RULE 402. Nuisance (Adopted May 7, 1976)

A person shall not discharge from any source whatsoever such quantiti of air contaminants or other material which cause injury, detriment, nuisance or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health or safety of any such persons or the public, or which cause, or have a natural tendency to cause, injury or damage to business or property.

The provisions of this rule shall not apply to odors emanating from agricultural operations necessary for the growing of crops or the raising of fowl or animals.

RULE 403. Fugitive Dust (Adopted May 7, 1976)

(a) A person shall not cause or allow the emissions of fugitive dust from any transport, handling, construction or storage activity so that the presence

Enacted
Revised October 8, 1976
Revised December 2, 1977

Rule 430 Breakdown Provisions

(a) A person shall report any breakdown which results in a violation of any rule in Regulations IV or XI to the District within one hour of such breakdown or within one hour of the time said person knew or reasonably should have known of its occurrence. Such report shall identify the time, specific location, equipment involved and to the extent known, the causes of the breakdown. The estimated time for repairs shall be reported as soon as possible thereafter.

(b) The provisions of any rule in Regulations IV or XI with the exception of Rule 402 do not apply to any emissions directly caused by a breakdown of any equipment provided all of the following criteria are met:

(1) The excess emissions did not result from operator error, neglect, or improper operating or maintenance procedures.

(2) Steps are immediately taken to correct the condition leading to the excessive emissions and to minimize the emission itself.

(3) The equipment is operated only until the end of a cycle or twenty-four hours, whichever is sooner, at which time it shall be shut down for repairs.

The burden of proving the criteria in this subsection shall be upon the person attempting to come under the provisions of this rule.

(c) If a violation of any rule in Regulation IV or XI is likely or suspected as a result of a reported breakdown, the Executive Officer shall promptly investigate and determine whether the occurrence constitutes a breakdown in accordance with the criteria set forth in subsection (b) of this rule.

(d) Equipment may be operated beyond the limitation in subsection (b)(3), provided that a petition for an emergency variance has been filed with the Clerk of the Hearing Board in accordance with Regulation V. In the event that the breakdown occurs outside of the normal District working hours, the intent to file for an emergency variance shall be transmitted to the District in the manner and form prescribed by the Executive Officer.

(e) Within one week after a breakdown which caused a violation of any rule in Regulations IV or XI has been corrected, the owner or operator shall submit a written report to the Executive Officer which includes:

- (1) A statement that the breakdown has been corrected, together with the date of correction and proof of compliance;
- (2) A specific statement of the reason(s) or cause(s) for the breakdown sufficient to enable the Executive Officer to determine whether the occurrence was a breakdown in accordance with the criteria set forth in subsection (b) of this rule;

(3) A description of the corrective measures undertaken and/or to be undertaken to avoid such a breakdown in the future;

(4) An estimate of the emissions caused by the breakdown; and

(5) Pictures of the equipment or controls which failed, if available.

Rule 431.1 Sulfur Content of Gaseous Fuels

(a) A person shall not burn any natural gas or substitute natural gas commercially sold containing sulfur compounds in excess of 80 ppm (parts per million) calculated as hydrogen sulfide (H_2S)

(b) A person shall not sell any natural gas or substitute natural gas containing sulfur compounds in excess of 80 ppm calculated as hydrogen sulfide.

(c) A person shall not burn any refinery or process gas containing sulfur compounds in excess of 800 ppm calculated as hydrogen sulfide.

(d) The provisions of this rule shall not apply to:

(1) The burning of gaseous sulfur compounds used in the manufacturing of sulfur or sulfur compounds.

(2) The incinerating of waste gases provided that the gross heating value of such gases is less than 2 kilogram-calorie per cubic meter (280 British Thermal Units per cubic foot) at standard conditions and the fuel used to incinerate such waste gases does not contain sulfur or sulfur compounds in excess of the amount specified in this rule.

(3) Sewage digester gas.

(4) The use of gaseous fuels where the gaseous products of combustion are used as raw materials for other processes.

(5) The use of gaseous fuels to propel or test any vehicle, aircraft, locomotive, boat or ship.

(6) The use of fuel with higher sulfur content where process conditions or control equipment remove sulfur compounds from the stack gases to the extent that the emission of sulfu

compounds into the atmosphere is no greater than that which could be emitted by using a fuel which complies with the provisions of this rule.

(7) The burning of natural gas, obtained from operator's oil wells, for production field operations.

(e) Definitions

(1) Refinery or Process Gas

For the purpose of this rule, refinery or process gas is defined as any liquefied petroleum gas or gas generated by a petroleum refining process which is used within the refinery and not commercially sold.

(2) Natural Gas

For the purpose of this rule, natural gas is defined as any gases existing in their natural state as they come from the well or from oil separating or gasoline extraction apparatus.

(3) Substitute Natural Gas

For the purpose of this rule, substitute natural gas is defined as any gas manufactured and commercially sold.

Enacted December 2, 1977

Rule 431.2 Sulfur Content of Liquid Fuels

(a) A person shall not burn any liquid fuel having a sulfur content in excess of 0.5 percent by weight.

(b) Steam Generators at Electric Power Plants

(1) No person shall burn liquid fuel with a sulfur content of more than 0.25 percent by weight in a steam generator at an electric power plant on or after March 1, 1977 except that:

(A) Existing supplies of fuel with a sulfur content of not more than 0.5 percent by weight owned, either in storage or in transit on the effective date of this subsection (b) may be utilized until such supply is exhausted

(B) From March 1, 1977, to July 1, 1978, if sufficient amounts of fuel with a sulfur content of not more than 0.25 percent by weight are not available on a regularly scheduled future need basis, fuel with a sulfur content of not more than 0.5 percent by weight may be substituted for only such portion of a person's requirements for which fuel with a sulfur content of not more than 0.25 percent by weight is not available.

(C) Noncomplying fuel may be burned if the concentration of sulfur dioxide in stack gases is no more than would be present if liquid fuel with a sulfur content of no more than 0.25 percent were burned.

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(2) Persons burning liquid fuels in steam generators at electric power plants shall submit to the Executive Officer, within thirty calendar days from the beginning of each month, a tabulation of the amount of liquid fuel burned at each of such person's power plants on each day of the preceding month, also listing, for each day, the average sulfur content of the fuel burned each day. If noncomplying fuel was burned, a statement of the efforts made to obtain liquid fuel with a sulfur content by weight of 0.25 percent shall be submitted under penalty of perjury.

(c) The provisions of this rule shall not apply to:

(1) The burning of liquid sulfur compounds used in the manufacturing of sulfur or sulfur compounds.

(2) The use of liquid fuels where the gaseous products of combustion are used as raw materials for other processes.

(3) The use of liquid fuel to propel or test any vehicle, aircraft, locomotive, boat or ship.

(4) The use of a liquid fuel with higher sulfur content where process conditions or control equipment remove sulfur compounds from the stack gases to the extent that the emission of sulfur compounds into the atmosphere is no greater than that which could be emitted by using a fuel which complies with the provisions of this rule.

Enacted December 2, 1977

Rule 431.3 Sulfur Content of Fossil Fuels

(a) A person shall not burn any solid fossil fuel having a sulfur content which will emit more than 0.56 pounds of sulfur dioxide (SO_2) per million BTU.

(b) The provisions of this rule shall not apply to:

(1) The burning of solid sulfur compounds in the manufacturing of sulfur or sulfur compounds.

(2) The use of solid fossil fuels in any metallurgical process.

(3) The use of any solid fossil fuel where the gaseous products of combustion are used as raw materials for other processes.

(4) The use of solid fossil fuel to propel or test any vehicle, locomotive, boat or ship.

(5) The use of a solid fossil fuel with higher sulfur content where process conditions or control equipment remove sulfur compounds from stack gases to the extent that the emission of sulfur compounds into the atmosphere is no greater than that which could be emitted by using a fuel which complies with provisions of this rule.

(c) Solid Fossil Fuel

For the purpose of this rule "Solid Fossil Fuel" means coal, or any form of solid fuel derived from fossil materials, for the purpose of creating useful heat.

RULE 468. Sulfur Recovery Units **Revised October 8, 1976**

A person shall not discharge into the atmosphere from any sulfur recovery unit producing elemental sulfur, effluent process gas containing more than:

(a) 500 ppm of sulfur compounds expressed as sulfur dioxide, calculated on a dry basis averaged over a minimum of 15 consecutive minutes.

(b) 10 ppm of hydrogen sulfide averaged over a minimum of 15 consecutive minutes and calculated on a dry basis.

(c) 90 kilograms (198.5 pounds) per hour of sulfur compounds expressed as sulfur dioxide.

Any sulfur recovery unit having an effluent process gas discharge containing less than 5 kilograms (11.0 pounds) per hour of sulfur compounds expressed as sulfur dioxide may dilute to meet the provision of subsection (a) above until October 1, 1976.

RULE 469. Sulfuric Acid Units Revised October 8, 1976

A person shall not discharge into the atmosphere from any sulfuric acid unit, effluent process gas containing more than:

(a) 500 ppm of sulfur compounds expressed as sulfur dioxide, calculated on a dry basis averaged over a minimum of 15 consecutive minutes.

(b) 90 kilograms (198.5 pounds) per hour of sulfur compounds expressed as sulfur dioxide.

RULE 470. Asphalt Air Blowing Adopted May 7, 1976

A person shall not operate or use any equipment for the air blowing of asphalt unless all gases, vapors and gas-entrained effluents from such equipment are:

(a) Incinerated at temperatures of not less than 760°C (1400°F) for a period of not less than 0.3 second, or

(b) Processed in such a manner determined by the Air Pollution Control Officer to be equally, or more, effective for the purpose of air pollution control than subsection (a).

calculated to 12 percent of carbon dioxide (CO_2) at standard conditions averaged over a minimum of 15 consecutive minutes and shall not discharge particles which are individually large enough to be visible while suspended in the atmosphere. Any carbon dioxide (CO_2) produced by combustion of any liquid or gaseous fuels shall be excluded from the calculation to 12 percent of carbon dioxide (CO_2).

RULE 474. Fuel Burning Equipment - Oxides of Nitrogen (Revised October 8, 1976)

(a) A person shall not discharge into the atmosphere from any non-mobile fuel burning equipment oxides of nitrogen, expressed as nitrogen dioxide (NO_2), calculated at 3 percent oxygen on a dry basis averaged over a minimum of 15 consecutive minutes, in excess of the concentrations shown in the following table:

	Maximum Gross Heat Input Rate in Millions Per Hour					
	Kilogram-Calories	British Thermal Units	Kilogram-Calories	British Thermal Units	Kilogram-Calories	British Thermal Units
Fuel	140 or more but less than 450	555 or more but less than 1786	450 or more but less than 540	1786 or more but less than 2143	540 or more	2143 or more
Gas	300 ppm NO_x		225 ppm NO_x		125 ppm NO_x	
Liquid or Solid	400 ppm NO_x		325 ppm NO_x		225 ppm NO_x	

The emission limitations for equipment with a maximum gross heat input from at least 140 but less than 450 million kilogram calories (555 but less than 1786 million BTU) per hour shall not be effective until January 1, 1977.

(b) A person shall not discharge into the atmosphere from any steam generating equipment, oxides of nitrogen, expressed as nitrogen dioxide (NO_2), calculated at 3 percent oxygen on a dry basis averaged over a minimum of 15 consecutive minutes, in excess of the concentrations shown in the following table:

	Maximum Gross Heat Input Rate in Millions Per Hour	
	Kilogram-Calories	British Thermal Units
Fuel	140 or more	555 or more
Gas	125 ppm NO_x	
Liquid or Solid	225 ppm NO_x	

The provisions of this subsection shall be effective only in San Bernardino and Riverside Counties.

(c) When more than one type of fuel is used, the allowable concentration shall be determined by proportioning the gross heat input for each fuel to its respective allowable concentration.

(d) For the purpose of this rule, fuel burning equipment shall be comprised of the minimum number of boilers, furnaces, jet engines or other fuel burning equipment, the simultaneous operations of which are required for the production of useful heat or power.

RULE 475. Electric Power Generating Equipment (Revised October 8, 1976)

(a; A person shall not discharge into the atmosphere from any equipment having a maximum heat input rate of more than 12.5 million kilogram calories (50 million BTU) per hour used to produce electric power, for which a permit to build, erect, install or expand is required after May 7, 1976, air contaminants that exceed the following:

(1) Oxides of nitrogen, expressed as nitrogen dioxide (NO_2), calculated at 3 percent oxygen on a dry basis averaged over a minimum of 15 minutes, as shown in the following table:

Fuel	Gas	Liquid	Solid
Concentration	80 ppm NO_x	160 ppm NO_x	225 ppm NO_x

When more than one type of fuel is used, the allowable concentration shall be determined by proportioning the gross heat input and allowable concentration of each fuel.

(2) Combustion contaminants that exceed both of the following two limits:

(A) 5 kilograms (11 pounds) per hour.

(B) 23 milligrams per cubic meter (0.01 gr/SCF) calculated at

RULE 476. Steam Generating Equipment (Revised October 8, 1976)

(a) A person shall not discharge into the atmosphere from any equipment having a maximum heat input rate of more than 12.5 million kilogram calories (50 million BTU) per hour used to produce steam, for which a permit to build, erect, install or expand is required after May 7, 1976, air contaminants that exceed the following:

(1) Oxides of nitrogen, expressed as nitrogen dioxide (NO_2), calculated at 3 percent oxygen on a dry basis overaged over a minimum of 15 minutes, as shown in the following table:

Fuel	Gas	Liquid or Solid
Concentration	125 ppm NO_x	225 ppm NO_x

When more than one type of fuel is used, the allowable concentration shall be determined by proportioning the gross heat input and allowable concentration of each fuel.

(2) Combustion contaminants that exceed both of the following two limits:

(A) 5 kilograms (11 pounds) per hour.

(B) 23 milligrams per cubic meter (0.01 gr/SCF) calculated at 3 percent oxygen on a dry basis averaged over a minimum of 15 consecutive minutes.

(b) Nothing in this rule shall be construed as preventing the maintenance or preventing the alteration or modification of existing steam generating equipment which will not increase the mass rate of air contaminant emissions.

(a) Definitions:

(1) Coke oven. "Coke oven" means any retort oven in which coal is converted to coke.

(2) Coke oven battery. "Coke oven battery" means a series of ovens grouped by a common designation or function.

(3) Coking cycle. "Coking cycle" means the period of time between replacing the last charge port lid and removing the coke-side oven door.

(4) Charge port. "Charge port" means any opening in the roof of a coke oven through which coal is introduced.

(5) Charging operation. "Charging operation" means the process of introducing coal into a coke oven. The coal charging operation begins with the first introduction of coal into the oven and ends when the last oven charge port lid is replaced.

(6) Collecting main. "Collecting main" means the piping extending from the connection to the gas offtake piping on a coke oven to the flange of the battery pressure control valve.

(7) Gas offtake system. "Gas offtake system" means any set of piping (e.g., standpipes, goosenecks) that interconnects a coke oven with a collecting main which is common to all such systems. The gas offtake system extends from the connection on top of the coke oven to the connection on the collecting main.

(8) Hot car. "hot car" means a vehicle which transfers hot coke from the oven to the area of quenching.

(9) Larry car. "Larry car" means a vehicle which transfers and introduces coal into a coke oven.

(10) Pushing operation. "Pushing operation" means the process of removing coke from the coke oven. The coke pushing operation begins when the coke-side oven door is removed and is completed when the hot car enters the quench tower and the coke-side oven door is replaced.

(11) Visible emission. "Visible emission" means any discharge of an air contaminant into the atmosphere which is darker in shade as that designated No. 0 on the Ringelmann Chart, as published by the United States Bureau of Mines, or is of such opacity as to obscure an observer's view to a degree greater than Ringelmann No. 0.

(b) Coal Charging Emissions:

A person shall not discharge into the atmosphere any visible emission of air contaminants for a total accumulated time equal to or greater than 60 seconds from any charge port, offtake system or larry car on a coke oven during four (4) consecutive charging operations.

(c) Charge Port Emissions:

A person shall not discharge into the atmosphere any visible emission of air contaminants from more than three (3) percent of the total coke oven charge ports per coke oven battery during the coking cycle.

(d) Gas Offtake System Emissions:

A person shall not discharge into the atmosphere any visible emission of air contaminants from more than ten (10) percent of the total gas offtake systems per coke oven battery during the coking cycle.

(e) Collecting Main Emissions:

A person shall not discharge into the atmosphere any visible emission of air contaminants from more than three (3) points on the collecting mains of a coke oven battery.

(f) Oven Door Emissions:

(1) A person shall not discharge into the atmosphere any visible emission from more than fifteen (15) percent of the total push-side coke oven doors or fifteen (15) percent of the total coke-side coke oven doors, per coke oven battery.

(2) A person shall not discharge into the atmosphere any visible emission from more than ten (10) percent of the total push-side coke oven doors or ten (10) percent of the total coke-side coke oven doors, per coke oven battery.

(3) For the purposes of this rule, emissions from the chuck door located on the push-side coke oven door shall be considered an emission from the push-side coke oven door.

(g) Coke Pushing Emissions:

(1) All coke ovens shall be equipped with a device that will capture and collect coke-side particulate emissions resulting directly from the pushing operation. The efficiency of the collection device shall be such that the outlet gas shall contain no more than 0.03 pound of noncondensible particulate matter per ton of coal charged for each oven, averaged from five (5) pushes. Section (g)(1) shall apply only to air pollution control devices exhausting to stacks.

(2) A person shall not discharge into the atmosphere from the hot car, capture or collection device at any time, any visible emission which is:

(a) As dark or darker in shade as that designated No. 1 on the Ringelmann Chart, as published by the United States Bureau of Mines, or

(b) Of such opacity as to obscure an observer's view to a degree equal to or greater than does smoke described in subsection (g)(2)(a) of this rule.

(h) Effective Dates:

(1) This rule is effective upon the date of adoption for all equipment not completed and put into service. Subsections (c), Charge Ports, and (d), Offtake Systems, are effective upon the date of adoption for all equipment completed and put into service.

(2) The owner or operator of any equipment subject to subsection (f)(1), Doors, of this rule which has been completed and put into service prior to the date of adoption, shall comply with the provisions of subsection (f)(1) by July 1, 1977 on batteries installed prior to 1945. Batteries installed subsequent to 1945 shall comply with subsection (f)(1) upon the date of adoption.

(3) The owner or operator of any equipment subject to subsections (b), Charging, and (e), Collecting Mains, of this rule which has been completed and put into service prior to the date of adoption, shall comply with the provisions of subsections (b) and (e) by August 31, 1977.

(4) The owner or operator of any equipment subject to subsection (f)(2), Doors, of this rule which has been completed

Enacted December 2, 197

Rule 519 Emergency Variance Procedures - Breakdowns

(a) No emergency variance shall be granted in the case of a breakdown subject to the provisions of Rule 430 unless the Hearing Board determines that:

  (1) The occurrence constitutes a breakdown in accordance with the criteria set forth in subsection (b) of Rule 430;

  (2) The requirements for a variance set forth in Health and Safety Code Section 42352 and 42353 have been met.

(b) An emergency variance in the case of a breakdown subject to the provisions of Rule 430 shall remain in effect only for as long as necessary to repair or remedy the emergency or breakdown condition but in no event after a regularly noticed hearing has been held.

(c) Nothing in this Rule shall be construed as limiting any person's rights to petition the Hearing Board or as limiting the Hearing Board's discretion to grant variances as authorized in Article 3, Chapter 4, Part 4 of Title 26 (commencing with Section 42350) of the Health and Safety Code.

WAYNE COUNTY
MICHIGAN

ARTICLE VI

Section 6.1 **Emission of Visible Air Contaminants**: No person shall cause or permit a discharge into the atmosphere from any single source of emission whatsoever any visible air contaminant which is a shade equal to or darker than number 1.5 on the Ringelmann Chart or of a density equal to or greater than 30 percent opacity.

Section 6.3A **Fuels and Emissions Relating to Power Generation, Steam Generation, Space Heating, and Service Water Heating.**

1. No person shall cause or permit to be burned fuel whose sulfur content exceeds the sulfur in fuel limitation schedule.
2. No person shall import, sell, purchase, exchange, deliver, store, transport, or offer for sale or exchange, fuel for burning in the County whose sulfur content exceeds the sulfur in fuel limitation schedule.
3. Any person who supplies fuels containing more than 0.5 percent sulfur by weight directly to a user for burning in the County shall keep records of the percent sulfur by weight contained in such fuel by date delivered, quantity, and to whom sold. Such records shall be available for review by the Division.
4. Sulfur in fuel limitation schedule:

SULFUR IN FUEL, PERCENT BY WEIGHT

Fuel Use By	Fuel Type	%
Electric Power plant & central steam generation, including Government plants.	Pulverized Coal	1.50
	Other Coal	0.75
	Distillate Oil No. 1 and No. 2	0.30
	Crude & Heavy Oil No. 4, 5, 6	1.00
Residential & commercial space and water heating	Coal	0.30
	Distillate Oil No. 1 and No. 2	0.30
	Crude & Heavy Oil No. 4, 5, 6	1.00
All other uses not specified above	Coal	0.75
	Distillate Oil No. 1 and No. 2	0.30
	Crude & Heavy Oil No. 4, 5, 6	1.00

WAYNE COUNTY
MICHIGAN

ARTICLE VI. SECTION 6.3

EMISSION OF SULFUR COMPOUNDS

Fuel Use By	Fuel Type	SULFUR IN FUEL, PERCENT BY WEIGHT				
		Effective Date				
		Aug. 1, 1972	Aug. 1, 1973	Aug. 1, 1974	Aug. 1, 1975	Aug. 1, 1976
Electric Power plant & central steam generation, including Government plants	Pulverized Coal Other Coal Distillate Oil No. 1 and No. 2 Crude & Heavy oil No. 4, 5, 6	2.50 1.00 0.20 1.25	2.00 0.75 0.20 1.00	1.50 0.50 0.20 0.70	1.25 0.50 0.20 0.70	1.00 0.50 0.20 0.70
Residential & commercial space and water heating	Coal Distillate Oil No. 1 and No. 2 Crude & Heavy oil No. 4, 5, 6	0.75 0.20 1.25	0.50 0.20 1.00	0.50 0.20 0.70	0.30 0.20 0.70	0.30 0.20 0.70
All other uses not specified above	Coal Distillate Oil No. 1 and No. 2 Crude & heavy oil No. 4, 5, 6	1.00 0.20 1.25	0.75 0.20 1.00	0.50 0.20 0.70	0.50 0.20 0.70	0.50 0.20 0.70

5. No person shall cause or permit a discharge into the atmosphere from any single fuel burning source of emission whatsoever sulfur dioxide in excess of the sulfur dioxide concentrations in exhaust gas schedule.

6. Sulfur dioxide concentration in exhaust gas schedule

Table A

EMISSION OF SULFUR COMPOUNDS

Fuel Use by	Fuel Type	SULFUR DIOXIDE IN EXHAUST GAS, PARTS PER MILLION BY VOLUME CORRECTED TO 50 PERCENT EXCESS AIR				
		Effective Date				
		Aug. 1, 1972	Aug. 1, 1973	Aug. 1, 1974	Aug. 1, 1975	Aug. 1, 1976
Electric power plant & central steam generation, including Government plants	Pulverized Coal Other coal Distillate Oil No. 1 and 2 Crude & heavy oil, No. 4, 5, 6	1400 560 120 500	1100 420 120 400	825 280 120 280	700 280 120 280	560 280 120 280
Residential & commercial space and water heating	Coal Distillate Oil No. 1 and 2 Crude & heavy oil No. 4, 5, 6	420 120 500	280 120 400	280 120 280	120 120 280	120 120 280
All other uses not specified above	Coal Distillate oil No. 1 and 2 Crude & heavy oil No. 4, 5, 6	560 120 500	420 120 400	280 120 280	280 120 280	280 120 280

ARTICLE VI - 6.3-A

7. a. No person shall cause or permit the burning of fuel in any fuel burning equipment having a higher average sulfur content than the fuel burned during the previous twelve (12) calendar months based on a comparable BTU content. For the purpose of determining compliance, the average sulfur content of all fuel and fuels used during each of the calendar months prior to August 1, 1971, shall be determined by averaging the sulfur content of all fuel used during each calendar month on the basis of pounds of sulfur per million BTU's heating value of the fuel or fuels, which shall not be exceeded in any calendar month from and after August 1, 1971, when compared with the same calendar month of the previous year, and determined upon the same averaging basis.

b. The use of fuels having sulfur contents as set forth in the sulfur in fuel limitation schedule shall not allow degradation in the mass rate of particulate emission. The Division may require source emission tests which may be performed by the Division or under its supervision at the expense of the owners of such equipment and may require the submission of reports to the Division both before and after changes are made in the sulfur content in fuel.

8. No person who installs new fuel burning equipment after August 1, 1972 shall cause or permit the emission into the atmosphere of sulfur dioxide exceeding the sulfur dioxide in exhaust gas schedule stipulated for August 1, 1976.

9. If the measured sulfur dioxide air quality in the County meets the necessary Federal ambient air quality standard before implementation of any effective date in Section 6.3A (4) and 6.3A (6), the Board may suspend implementation of any portion of said schedule in whole or in part upon reasonable evidence that failure to implement such supplementary provisions will not compromise achievement and/or maintenance of the secondary Federal ambient air quality standard.

ARTICLE VI - 6.3-C

Section 6.3C **Sulfuric Acid Plants:**

1. No person shall cause or permit sulfur dioxide tail gas emissions into the atmosphere from sulfuric acid manufacturing plants to exceed 6.5 pounds per ton of acid produced.

2. No person shall cause or permit sulfuric acid, including sulfur trioxide, emissions into the atmosphere to exceed 0.70 pounds per ton of acid produced.

Section 6.3D **Sulfur Recovery Plants**: No person shall cause or permit the emission into the atmosphere of sulfur dioxide, sulfur trioxide, or sulfuric acid from existing sulfur recovery plant to exceed 0.02 pounds per pound of sulfur produced, or 0.01 pounds per pound of sulfur produced from a plant constructed after July 22, 1971.

Section 6.3E **Petroleum Refining Activities:** No person shall cause or permit the combustion of any refinery process gas stream that contains hydrogen sulfide in concentration greater than 100 grains per hundred cubic feet of gas without removal of the hydrogen sulfide in excess of this concentration.

Section 6.3F **Hydrogen Sulfide:** When the odor of hydrogen sulfide is found to exist beyond the property line of the source, measurements shall be taken by the method set forth in Section 6.3H (4) and if measured levels of hydrogen sulfide are found to be in excess of 0.005 parts per million by volume for a maximum period of two (2) consecutive minutes, the person causing or permitting such emissions into the atmosphere shall be deemed in violation of this section.

Section 6.3G **Sources Not Specifically Named:** No person shall cause or permit the emission into the atmosphere from any single source gases containing more than 300 parts per million sulfur dioxide nor more than 15 milligrams per cubic meter of sulfuric acid or sulfur trioxide or a combination thereof: Provided however that the foregoing limitations shall not apply to emissions in Section 6.3A through 6.3F.

Section 6.3H **Methods of Measurement:** Methods for sampling emissions covered in this article shall be as noted below. These methods shall be used as a general guide, but may be modified or adjusted by the Director to suit specific sampling conditions or needs based upon good practice, judgment, and experience.

1. Sulfur in Fuel Analysis:
   - a. Coal: Sampling and analysis of coal ASTM D271.
   - b. Oil: Standard method of test for sulfur in petroleum oils ASTM D 1551.
2. Sulfur Dioxide in stack gas analysis: Public Health Service Publication 999-AP13 (1965) Appendix B, p.p. 85-7.
3. Sulfur Trioxide in stack gas analysis: Sulfuric acid in stack gas analysis: Public Health Service Publication 999 AP-13 (1965) Appendix B, p.p. 85-7.
4. Hydrogen Sulfide Analysis: Methylene Blue Method, Stern A. C., Ed. "Air Pollution," Vol: II, second ed. 1969, p.p. 78-80. As researched by:
   - a. M. S. Budd and H. A. Bewick, Analysis Chemical 24, 1536 (1952).
   - b. M. B. Jacobs, M. M. Braverman and S. Hochheiser, Analysis Chemical 29, 1349 (1957).

APPENDIX D

EXCERPTS OF STATE/LOCAL PROVISIONS FOR MALFUNCTIONS AND SCHEDULED MAINTENANCE

The following agencies were found to have no provisions for excess emissions related to equipment malfunction on scheduled maintenance.

States

- o Alaska
- o California (administered by locals)
- o Delaware
- o New Jersey
- o North Carolina
- o Pennsylvania
- o South Carolina
- o Vermont

Locals

- o Boston
- o Dade County
- o Wayne County

16-2.14(1)-S14000 MALFUNCTION OF AN INSTALLATION

(1) When a malfunction in any installation occurs that can be expected to increase the emissions and to continue for a period greater than four hours, the person shall notify the administrator or his designated representative by telephone promptly or at the beginning of the next working day after the malfunction. On receipt of this notification, if the condition still persists, the administrator or his designated representative may permit the continuance of the operation for a period not to exceed ten days provided that written application is made to the administrator. Such application shall be made within 24 hours of the malfunction or within such other time period as the administrator or his designated representative may specify. In cases of major equipment failure, additional time may be granted by the administrator, provided a corrective program has been submitted by the person and approved by the administrator and provided there is no threat to life, health or property.

(2) For all malfunctions the duration of which are four hours or more, the administrator may require each owner or operator to file, within seven days, a written report with the administrator. The report shall include the date, time of commencement, and completion of each time period of excess emissions due to startup, shutdown, malfunction, or other cause. The report shall include the nature and cause of any such malfunction, corrective actions taken, and preventive measures adopted.

(3) Emissions in excess of the applicable standards resulting from a malfunction shall be considered violations unless the requirements of subsection (1) and (2) of this rule have been met.

Rule 18. COMPLIANCE; EXCEPTIONS DUE TO BREAKDOWNS OR SCHEDULED MAINTENANCE

(1) Abnormal operating conditions resulting from malfunction, breakdown, and/or necessary repairs to control or processing equipment and appurtenances which cause emissions in excess of the limitations specified in the emission control regulations shall not be deemed violations provided that:

(a) The person responsible for the operation of the emission source notified the Department of the occurrence and nature of such malfunctions, breakdown, or repairs, immediately after noted occurrence.

(b) The number of occurrences of such breakdowns is not deemed excessive by the Department and appropriate reasonable action is taken to initiate and complete any necessary repairs and place the equipment back in operation as quickly as possible.

(2) Emissions in excess of the limitations specified in these emission control regulations resulting from scheduled maintenance of control equipment and appurtenances will be permitted only on the basis of prior approval by the Department and upon demonstration that such maintenance cannot be accomplished by maximum reasonable effort, including off-shift labor where required, during periods of shutdown of any related equipment.

(3) Excessive contaminant emissions from fuel burning equipment used for indirect heating purposes resulting from fuel or load changes, start up, soot blowing, cleaning of fires, and rapping of precipitators will not be deemed violations provided that they do not exceed a period or periods aggregating more than five (5) minutes during any consecutive one (1) hour period. Provided, however, that where the operator of such equipment can demonstrate to the satisfaction of the Department that any specific operational procedures will require that the allowable time period for excessive emissions be extended beyond five (5) minutes during any one hour, the Department may authorize, upon request of the operator, an adjusted time schedule for permitting such excessive emissions. Such authorization shall require that visible emissions not exceed a shade or density darker than the designated as Ringelmann No. 3 on the Ringelmann Chart, and shall specify an appropriate time and daily frequency schedule for such excessive emissions.

Statute: 81-1504(2)(11)(12)
81-1505(1)(12)(15)(19)
Legal Citation: Rule 18, APC, Nebraska Department of Environmental Control

2.5 Scheduled Maintenance, Testing, and Breakdown or Upset:

2.5.1 Scheduled maintenance, testing approved by the Director, or repairs which may result in emissions of air contaminants prohibited by these regulations shall be performed during a time designated by the Director as being favorable for atmospheric ventilation.

2.5.2 The Director shall be notified in writing on the time and expected duration at least 24 hours in advance of any scheduled maintenance which may result in emission of air contaminants prohibited by these regulations.

2.5.3 The Director shall be notified within 24 hours after any breakdown or upset. Phone (702) 885-4670.

2.5.4 Breakdown or upset, determined by the Director to be unavoidable and not the result of careless or marginal operations, shall not be considered a violation of these regulations.

2.6 ~~Testing and Sampling:~~

2.6.1 ~~To determine compliance with these regulations prior to approval of or prior to the continuance of an operating permit or similar class of permits, the Director may either conduct or order the owner of any source to conduct or have conducted such testing and sampling as the Director determines necessary.~~

2.6.2 ~~Within 60 days after achieving the maximum production rate at which the affected facility will be operated, but not later than 180 days after initial startup of such facility and at such other times as may be required by the Director.~~

2.6.3 ~~Performance tests shall be conducted and data reduced in accordance with the test methods and procedures contained in each applicable subpart unless the Director (1) specifies or approves, in specific cases, the use of a reference method with minor changes in methodology, (2) approves the use of an equivalent method, (3) approves the use of an alternative method the results of which he has determined to be adequate for indicating whether a specific source is in compliance, or (4) waives the requirement for performance tests because the owner or operator of a source has demonstrated by other means to the Director's satisfaction that the affected facility is in compliance with the stand~~

2.6.4 ~~Performance tests shall be conducted under such conditions as the Director shall specify to the plant operator based on representative performance of the affected facility. The owner or operator shall make available to the Director such records as may be necessary to determine the conditions of the performance tests. Operations during periods of startup, shutdown, and malfunction shall not constitute representative conditions of performance tests unless otherwise specified in the applicable standard.~~

2.6.5 ~~The owner or operator of an affected facility shall provide the Director 30 days prior notice of the performance test to afford the Director the opportunity to have an observer present.~~

NEW HAMPSHIRE

~~Heat Input in Million British Thermal Units Per Hour~~	~~Maximum Allowable Emissions of Particulate Matter in Pounds Per Million British Thermal Units~~	
	~~Existing Fuel Burning Equipment~~	~~New Fuel Burning Equipment~~
~~Up to and including 10~~	~~0.60~~	~~0.60~~
~~50~~	~~0.46~~	~~0.40~~
~~100~~	~~0.40~~	~~0.35~~
~~250~~		~~0.10~~
~~500~~	~~0.31~~	~~0.10~~
~~1000~~	~~0.28~~	~~0.10~~
~~2500~~	~~0.24~~	~~0.10~~
~~5000~~	~~0.22~~	~~0.10~~
~~7500~~	~~0.20~~	~~0.10~~
~~10,000 and above~~	~~0.19~~	~~0.10~~

~~1. When two or more fuel burning units are connected to a single stack, the combined heat input of all units connected to the stack shall be used to determine the allowable emission from the stack.~~

~~2. When a single unit is connected to two or more stacks, the allowable emission shall not exceed that allowable for the same unit connected to a single stack.~~

~~V. Testing~~

~~The Agency may require any person owning or operating the combustion unit to conduct or have conducted testing to determine compliance with this regulation. The Agency at its option, witness or conduct such tests. Such testing will be done at a reasonable time and all data obtained will be provided to both parties.~~

~~A. Testing to determine the quantity of emission shall be undertaken by methods of measurement accepted by the Environmental Protection Agency or the New Hampshire Air Pollution Control Agency, and at a point or points such as are representative of the actual emission into the atmosphere.~~

~~B. When the Agency conducts or has conducted such tests, the person owning or operating the combustion unit shall provide such sampling ports as might be required, power and water sources and safety equipment such as scaffolding, railings, ladders, etc., to comply with generally accepted good safety practices.~~

VI. Malfunction and Breakdown

In the event of malfunction or breakdown of any combustion equipment or component part of the air pollution control equipment, emissions exceeding those specified by this regulation may be permitted by the Agency for a period not to exceed 48 hours, if the Agency is notified within eight hours of the malfunction or breakdown. The Commission may upon request of the owner of the combustion equipment or his authorized representative or at the request of the Director of the Agency grant an extension of time or temporary variance for a period longer than 48 hours.

~~B. When the Agency conducts or has conducted such tests, the person owning or operating the equipment shall provide such sampling ports as might be required, power and water sources and safety equipment such as scaffolding, railing, ladders, etc., to comply with generally accepted good safety practices.~~

~~IX. Incinerator Manufacturer's Name Plate~~

~~The manufacturer's name plate shall be installed in a conspicuous place on the incinerator, giving model number, rated capacity, and the types of waste for which the unit is designed.~~

~~X. Posting of Instructions for Operation of Incinerators~~

~~Detailed instructions for the operation of each incinerator shall be posted in a conspicuous place near the unit.~~

~~XI. Trained and Competent Operator Required~~

~~The owner is responsible for having an operator, trained and competent in the operation of the incinerator, in charge of the facility.~~

XII. Malfunction and Breakdown

In the event of malfunction or breakdown of any incinerator or component part of the air pollution control equipment, emissions exceeding those specified by this regulation may be permitted by the Agency for a period not to exceed 24 hours, if the Agency is notified immediately of the malfunction or breakdown and the Agency has determined the cause of the malfunction was unforseeable or unpreventable. The Agency may grant a further extension provided the source shall agree to a consent order establishing a repair schedule with a specified compliance date.

~~XIII. Nothing in this regulation shall be interpreted as prohibiting the Agency from approving the construction of any incinerator which will introduce:~~

~~A. New methods which may improve upon combustion and reduce air pollution.~~

~~B. New design and engineering features which may improve upon combustion and reduce air pollution.~~

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Public Hearing March 12, 1970
Adopted April 15, 1970
Effective date April 15, 1970
New Hampshire Air Pollution Control Commission
Stacey W. Cole, Chairman

~~E. The plant owner and/or operator shall control the dust from vehicular movement over access roads to, from, and within the plant premises by suitable means; e.g., paving, oiling, wetting, or other. Good operating practices shall be maintained at all times relative to stockpiling, screen changing, and general maintenance.~~

~~F. At such time as the Agency may request, the person owning or operating the plant shall submit all data on type, sizing, and quantity of the aggregates used, and hours of plant operation.~~

~~V. Testing~~

~~The Agency may require any person owning or operating the equipment to conduct or have conducted testing to determine compliance with this regulation. The Agency may, at its option, witness or conduct such tests. Such testing will be done at a reasonable time and all data obtained will be provided to both parties.~~

~~A. Testing to determine the quantity of emission shall be undertaken by methods of measurement accepted by the Environmental Protection Agency or the Agency, and at a point or points such as to be representative of the actual emission into the atmosphere.~~

~~B. When the Agency conducts or has conducted such tests, the person owning or operating the equipment shall provide such sampling ports as might be required, power and water sources and safety equipment such as scaffolding, railing, ladders, etc., to comply with generally accepted good safety practices.~~

~~VI. Notification~~

~~All persons owning or operating an asphalt hot mix plant shall notify the Agency of the name of the individual operating the plant, location of the plant, size, make, and type of air pollution control equipment on forms supplied by the Agency within 30 days of the effective date of this regulation.~~

~~When such plants are modified by changes in burner design, heating fuel, fan capacity, dryer design, air pollution control equipment or like changes which significantly affect the emission characteristics of the plants, the owner or operator shall then renotify the Agency of these changes within 30 days after placing such modification in operation.~~

~~When an existing plant is moved from one location to another, the plant owner or operator shall notify the Agency within [illegible] days of the site of the new location.~~

VII. Malfunctions and Breakdowns

In the event of any malfunction in equipment or the breakdown of any component part of the air pollution control equipment, emissions exceeding those specified may be permitted by the Agency for a period not to exceed 48 hours, if the Agency is notified within eight hours of the malfunction or breakdown. The Commission may upon request of the owner or operator of the plant or at the request of the Director of the Agency grant an extension of time or temporary variance for a period longer than 48 hours.

V. Malfunction or Breakdown

In the event of malfunction or breakdown of any component part of the air pollution control equipment, emissions in excess of those specified in this regulation may be permitted by the Agency for a period not to exceed 48 hours, provided that the Agency is notified within eight hours of the malfunction or breakdown.

The Commission may, upon request of the foundry owner or his authorized representative, or at the request of the Director of the Agency, grant an extension of time or temporary variance for a period longer than 48 hours.

~~VI. Existing installations unable to comply with Section III.A are required without further request to submit to the Agency on or before January 1, 1972, a statement of intent as to how and when compliance will be achieved. However, all existing installations shall comply with Section III.A not later than January 1, 1973.~~

Public Hearing March 17, 1971
Adopted May 12, 1971
Effective date May 12, 1971
Revised October 20, 1971
Revision Public Hearing January 4, 5 & 6, 1972
Revision Adopted January 19, 1972
Effective date of Revision February 18, 1972
New Hampshire Air Pollution Control Commission
Elizabeth A. Greene, Chairman

Revision II Public Hearing May 16, 1974
Revision Adopted May 16, 1974
Effective date June 15, 1974
New Hampshire Air Pollution Control Commission
Wayne E. Robinson, Chairman

AIR POLLUTION CONTROL AGENCY
STATE OF NEW HAMPSHIRE
State Laboratory Building, Hazen Dr.
Concord, New Hampshire 03301

~~A. Testing to determine the quantity of emission shall be undertaken by methods of measurement accepted by the Environmental Protection Agency or the Agency, and at a point or points such as to be representative of the actual emission into the atmosphere.~~

~~B. When the Agency conducts or has conducted such tests, the person owning or operating the equipment shall provide such sampling ports as might be required, power and water sources and safety equipment such as scaffolding, railing, ladders, etc., to comply with generally accepted good safety practices.~~

V. Notification

~~All persons owning or operating a sand and gravel facility shall notify the Agency of the name of the individual operating the facility, location of the facility, size, make, and type of air pollution control equipment, on forsm supplied by the Agency, within 30 days of the effective date of this regulation.~~

~~When such facilities are modified by changes which significantly affect the emission characteristics of the facility, the owner or operator shall then renotify the Agency of these changes within 30 days after placing such modifications in operation.~~

~~Portable facilities will advise the Agency of any relocation within five days of commencement of operations at a new location. Forms for this purpose are available at the Agency upon request.~~

VI. Malfunctions and Breakdowns

In the event of any malfunction in equipment or the breakdown of any component part of the air pollution control equipment, emissions exceeding those specified may be permitted by the Agency for a period not to exceed 40 hours, if the Agency is notified within eight hours of the malfunction or breakdown. The Commission may upon request of the owner or operator of the facility or at the request of the Director of the Agency grant an extension of time or temporary variance for a period longer than 40 hours.

VII. Compliance Schedule

~~Existing installations unable to comply with Sections III and IV are required without further request to submit to the Agency on or before December 31, 1972, a statement of intent as to how and when compliance will be achieved. However, all existing installations shall comply with Section III.A not later than December 31, 1973.~~

Public Hearing January 4, 5 & 6, 1972
Adopted January 19, 1972
Effective date February 18, 1972
New Hampshire Air Pollution Control Commission
Elizabeth A. Greene, Chairman
Revision I Public Hearing May 16, 1974
Adopted May 16, 1974
Effective date June 15, 1974
New Hampshire Air Pollution Control Commission
Wayne E. Robinson, Chairman

AIR POLLUTION CONTROL AGENCY
STATE OF NEW HAMPSHIRE
State Laboratory Building, Hazen Dr.
Concord, New Hampshire 03301

V. Malfunction or Breakdown

In the event of malfunction or breakdown of any component part of the air pollution control equipment, emissions in excess of those specified in this regulation may be permitted by the Agency for a period not to exceed 48 hours, provided that the Agency is notified within eight hours of the malfunction or breakdown.

The Commission may, upon request of the owner or his authorized representative, or at the request of the Director of the Agency, grant an extension of time or temporary variance for a period longer than 48 hours.

~~VI. Compliance Schedule~~

~~Owners/operators of existing installations unable to comply with Section II, above, must submit to the Agency, prior to December 31, 1972, a compliance schedule delineating the progressive steps required to bring these installations into compliance with this regulation on or before December 31, 1973. Such progressive steps shall include, but are not limited to; date for submittal of engineering plans, proof of purchase of the required control equipment, and date of completion and operation of the modified or new installation. Compliance schedules shall be subject to the approval of the Director.~~

~~VII. Notification~~

~~All persons owning or operating non-ferrous foundries, smelters, and investment casting facilities, shall notify the Agency of the name of the individual operating the facility, location of the facility, and size, make and type of air pollution control equipment, in forms supplied by the Agency within 30 days of the effective date of this regulation. When such facilities are modified by changes which significantly affect the emission characteristics of the facility, the owner or operator shall then renotify the Agency of these changes within 30 days after placing such modification into operation.~~

Public Hearing January 4, 5 & 6, 1972
Adopted January 13, 1972
Effective date February 18, 1972
New Hampshire Air Pollution Control Commission
Elizabeth A. Greene, Chairman

Revision I Public Hearing May 16, 1974
Adopted May 16, 1974
Effective date June 15, 1974
New Hampshire Air Pollution Control Commission
Wayne E. Robinson, Chairman

AIR POLLUTION CONTROL AGENCY
STATE OF NEW HAMPSHIRE
State Laboratory Bldg., Hazen Dr.
Concord, New Hampshire 03301

~~or conduct such tests. Such testing will be done at a reasonable time and all data obtained will be provided to both parties. A detailed test plan will be agreed upon by both parties prior to the start of testing.~~

~~A. Testing to determine the quantity of emission shall be undertaken by methods of measurement accepted by the Environmental Protection Agency or the New Hampshire Air Pollution Control Agency and at a point or points such as are representative of the actual emission into the atmosphere.~~

~~B. When the Agency conducts or has conducted such tests, the person owning or operating the manufacturing process or exhaust and ventilating system shall provide such sampling ports as might be required, power and water sources and safety equipment such as scaffolding, railings, ladders, etc., to comply with generally accepted good safety practices.~~

VI. Malfunction or Breakdown

In the event of a malfunction or breakdown of any component part of the air pollution control equipment, emissions in excess of those specified in this regulation may be permitted by the Agency for a period not to exceed 48 hours, provided that the Agency is notified expeditiously of the malfunction or breakdown.

The Commission may, upon request of the firm or owner or his authorized representative, or at the request of the Director of the Agency, grant an extension of time or temporary variance for a period longer than 48 hours.

~~VII. Notification~~

~~All persons owning or operating a process manufacturing, service, or miscellaneous industry installation shall notify the Agency of the name of the individual operating the installation, location of the installation, and size, make and type of air pollution control equipment, on forms supplied by the Agency, within 30 days of the effective date of this regulation. When such installations are modified by changes which significantly affect the emission characteristics of the installation, the owner or operator shall then renotify the Agency of these changes within 30 days after placing such modification into operation.~~

~~VIII. Compliance Schedule~~

~~Owners/operators of existing installations unable to comply with Section III, above, must submit to the Agency, prior to December 31, 1972, a compliance schedule delineating the progressive steps required to bring these installations into compliance with this regulation, on or before December 31, 1973. Such progressive steps shall include, but are not limited to: date for submittal of engineering plans, proof of purchase of the required control equipment, and date of completion and operation of the modification or new installation. Compliance schedules shall be subject to the approval of the Director.~~

NEW MEXICO

New Mexico Health and Social Services Board
P.E.R.A. Building
P. O. Box 2348
Santa Fe, New Mexico 87501

January 23, 1970

AIR QUALITY CONTROL REGULATIONS

Air Quality Control Regulations Numbers 801, 901, 1001, 1101, 1201 and 1301, adopted by the Health and Social Services Board on January 23, 1970, read:

801. UPSET, BREAKDOWN OR SCHEDULED MAINTENANCE.—Operation of any equipment or air pollution control devices or apparatus so as to cause emissions of air contaminants in excess of limits set by these regulations which is a direct result of upset conditions or breakdown or is a direct result of the shutdown of such equipment or air pollution control devices or apparatus for scheduled maintenance, is not a violation of these regulations provided:

A. The occurrence has been reported to the department at least 24 hours before any scheduled maintenance, and the scheduled maintenance is performed where possible during times specified by the department as favorable for atmospheric ventilation.

B. The occurrence has been reported to the department as soon as reasonably possible in the case of an upset or breakdown, but in no case more than 24 hours after occurrence.

C. Repairs are made with maximum, reasonable effort, including use of off-shift labor, overtime, or work periods of non-operation.

D. The emission of air contaminants is minimized as much as possible during the scheduled maintenance, upset or breakdown.

E. The air contaminant is not of a nature or quantity which would endanger public health or safety.

F. Upsets or breakdowns do not occur with such frequency that careless, marginal or unsafe operation is indicated.

901. TO CONTROL EMISSIONS LEAVING NEW MEXICO.—When emissions generated from sources in New Mexico cross the state boundary line, such emissions shall not exceed the standards and regulations of the receiving state, provided, regulations are in effect and reciprocal action is taken by the receiving state.

1001. SAMPLING EQUIPMENT.—When directed by the Board, or its designated representative, the necessary openings for sampling equipment shall be provided on stacks or other openings through which emissions are released to the atmosphere.

~~period of three or more minutes in any continuous 60 minute period, from any apparatus, contrivance or machine which is used in or is appurtenant to the manufacture of portland cement and for which a permit to construct was submitted, pursuant to 6 NYCRR Part 201, subsequent to the effective date of this Part, except uncombined water.~~

~~**Historical Note**~~

~~Sec. repealed, new filed June 29, 1961; renum. 203.5, Title 9, filed Sept., 1971; new filed Jan. 15, 1973 eff. 60 days after filing.~~

220.6 **Start up and upset conditions.** The commissioner may excuse a source owner from the provisions of sections 220.4 and 220.5 during startup or upset conditions that the source owner first notifies the commissioner of such start up or notifies the commissioner immediately thereafter of such upset condition.

Historical Note

Sec. repealed, new filed June 29, 1961; amd. filed May 22, 1969; renum. 203.6, Title 9, filed Sept., 1971; new filed Jan. 15, 1973 eff. 60 days after filing.

~~**220.7** **Monitoring of emissions and operations.** (a) The owner of any portland cement kiln or clinker cooler shall maintain a file of daily production rates and kiln feed rates and any particulate emission measurements. The production and feed rates shall be summarized monthly. The records and summary shall be retained for at least three years following the date of such records and summaries and shall be made available for inspection by the commissioner during normal business hours.~~

~~(b) The owner of any portland cement kiln or clinker cooler subject to subdivision (b) of section 220.4 or section 220.5, shall install, maintain, calibrate daily and operate a device, approved by the commissioner, for continuously measuring and recording the opacity of emissions from such kiln or clinker cooler. Records of opacity shall be retained for at least three years following the date on which they are made.~~

~~**Historical Note**~~

~~Sec. repealed, new filed June 29, 1961; renum. 203.7, Title 9, filed Sept., 1971; new filed Jan. 15, 1973 eff. 60 days after filing.~~

~~**220.8**~~

~~**Historical Note**~~

~~Sec. repealed, new filed June 29, 1961; renum. 203.8, Title 9, filed Sept., 1971.~~

~~**220.9**~~

~~**Historical Note**~~

~~Sec. repealed, new filed June 29, 1961; amd. filed Oct. 27, 1961; renum. 203.9, Title 9, filed Sept., 1971.~~

~~**220.10**~~

~~**Historical Note**~~

~~Sec. repealed, new filed June 29, 1961; amd. filed Jan. 12, 1962; renum. 203.10, Title 9, filed Sept., 1971.~~

~~**220.11**~~

~~**Historical Note**~~

~~Sec. repealed, new filed June 29, 1961; renum. 203.11, Title 9, filed Sept., 1971.~~

~~**220.12**~~

~~**Historical Note**~~

~~Sec. added, filed June 29, 1961; amd. filed June 17, 1970; renum. 203.12, Title 9, filed Sept., 1971.~~

~~**220.13**~~

~~**Historical Note**~~

~~Sec. added, filed Nov. 12, 1968; repealed, new filed Dec. 16, 1970; renum. 203.13, Title 9, filed Sept., 1971.~~

220.14

Historical Note

Sec. added, filed May 22, 1969; renum. 203.14, Title 9, filed Sept., 1971.

New York State Department of Environmental Conservation

PART 223

PETROLEUM REFINERIES
(effective August 12, 1972)

Sec.

223.1 Sulfur Compound Emissions

Sec.

223.2 Exceptions

Section 223.1 Sulfur Compound Emissions.

~~(a) After December 31, 1974 no person shall operate any existing emission source of a petroleum refinery so as to emit, burn or flare process gas containing more than fifty (50) grains of sulfur compounds (measured as hydrogen sulfide) per hundred standard cubic feet of gas.~~

~~(b) No person shall operate any new emission source in a petroleum refinery for which source an application for a Permit to Construct is submitted to the Commissioner subsequent to the effective date of this part, so as to emit, burn or flare process gas containing more than fifty (50) grains of sulfur compounds (measured as hydrogen sulfide) per hundred standard cubic feet of gas.~~

Section 223.2 Exceptions

(a) Flaring of process gas where it is necessary to relieve pressure systems during an operational upset.

(b) Start-up procedures whereby the adjustment of process streams necessitates emergency flaring to relieve pressure.

(c) Upon written application the Commissioner may exempt such person from the provision of Section 223.1 when it is determined that the emissions thus permitted will not cause a contravention of established ambient air quality standards or cause air pollution.

(d) Upon written application by a source owner, the commissioner may except such person from the provisions of this section for a period not exceeding one year if the applicant can demonstrate to the satisfaction of the commissioner, by acceptable diffusion analysis or other acceptable method, that the emissions from his stationary combustion installation will not cause any air quality standard to be exceeded. Any exception granted by the commissioner shall include the conditions that the source shall not cause air pollution or contravention of any air quality standard. The commissioner may extend the exception provided the source owner has complied with all such conditions.

Historical Note

Sec. added, filed Apr. 27, 1972; amd. filed July 12, 1972; repealed, new added, filed Apr. 27, 1973 eff. 60 days after filing.

227.4 Smoke emissions. (a) No person shall operate a stationary combustion installation which emits smoke the shade or appearance of which is equal to or greater than:

(1) Number 2 on the Ringlemann Chart, or 40 percent opacity, for any time period or

(2) Number 1 on the Ringlemann Chart, or 20 percent opacity, for a period of three or more minutes during any continuous 60 minute period.

(b) Startup and emergency emissions in excess of those permitted by section 227.4(a) shall not be considered a violation if the source owner can demonstrate to the satisfaction of the commissioner that such excessive emissions were not preventable.

Historical Note

Sec. added, filed July 12, 1972; repealed, new added, filed Apr. 27, 1973 eff. 60 days after filing.

227.5 Nitrogen oxides. (a) No person shall cause or allow emissions of nitrogen oxides to the outdoor atmosphere from any stationary combustion installation of more than 250 million Btu per hour rated total heat input for which an application for a permit to construct was received by the department subsequent to August 11, 1972, which exceed:

(1) 0.70 pounds of nitrogen oxides (expressed as NO_2) per million Btu heat input when solid fuel is burned.

(2) 0.30 pounds of nitrogen oxides (expressed as NO_2) per million Btu heat input for when fuel oil is burned.

(3) 0.20 pounds of nitrogen oxides (expressed as NO_2) per million Btu heat input when gaseous fuel is burned.

(b) Gas turbines and stationary internal combustion engines shall be exempt from subdivision (a) of this section.

Historical Note

Sec. added, filed July 12, 1972; repealed, new added, filed Apr. 27, 1973 eff. 60 days after filing.

227.6 Stack monitoring. (a) Any person who owns a stationary combustion installation of more than 250 million Btu per hour rated total heat input shall install and operate in accordance with manufacturer's instructions, instruments, approved by the commissioner, for continuously monitoring and recording smoke from such installations at all times that the combustion installation is in service. Where gas is the only fuel burned, monitoring and recording of smoke is not required.

(b) After June 30, 1974, any person required to control nitrogen oxides in accordance with section 227.5 shall install and operate in accordance with manufacturer's instructions, instruments, approved by the commissioner, for continuously monitoring and recording nitrogen oxides from such installations at all times that the stationary combustion installation is in service.

(c) Any person required under this section to monitor stack emissions shall

~~1.110 MEASUREMENT OF EMISSIONS OF AIR CONTAMINANTS~~

~~1.111 Sampling and Testing Methods~~

~~All tests shall be made and the results calculated in accordance with test procedures approved by the Department. All tests shall be made under the direction of persons qualified by training and/or experience in the field of air pollution control as approved by the Department.~~

~~1.112 Responsible Persons to Have Tests Made~~

~~The Department may require any person responsible for emission of air contaminants to make or have made tests to determine the emission of air contaminants from any source, whenever the Department has reason to believe that an emission in excess of that allowed by these regulations is occurring. The Department may specify testing methods to be used in accordance with good professional practice. The Department may observe the testing. All tests shall be conducted by reputable, qualified personnel. The Department shall be given a copy of the test results in writing and signed by the person responsible for the tests.~~

~~1.113 The Department May Make Tests~~

~~The Department may conduct tests of emissions of air contaminants from any source. Upon request of the Department the person responsible for the source to be tested shall provide necessary holes in stacks or ducts and such other safe and proper sampling and testing facilities, exclusive of instruments and sensing devices as may be necessary for proper determination of the emission of air contaminants.~~

1.120 SHUTDOWN AND MALFUNCTION OF AN INSTALLATION-REQUIREMENT FOR NOTIFICATION

1.121 Maintenance Shutdowns

In the case of shutdown of air pollution control equipment for necessary scheduled maintenance, the intent to shutdown such equipment shall be reported to the Department at least twenty-four (24) hours prior to the planned shutdown provided that the air contaminating source will be operated while the control equipment is not in service. Such prior notice shall include, but is not limited to the following:

~~(a) Identification of the specific facility to be taken out of service as well as its location and permit number.~~

~~(b) The expected length of time that the air pollution control equipment will be out of service.~~

~~(c) The nature and estimated quantity of emissions of air pollutants likely to be emitted during the shutdown period.~~

~~(d) Measures such as the use of off-shift labor and equipment that will be taken to minimize the length of the shutdown period.~~

~~(e) The reasons that it would be impossible or impractical to shutdown the source operation during the maintenance period.~~

1.122 Malfunctions

When a malfunction in any installation occurs that can be expected to cause the emission of air contaminants in violation of these regulations or other applicable rules and regulations, the person responsible for such installation shall immediately notify the Department of such malfunction and provide a statement giving all pertinent facts, including the estimated duration of the breakdown. On receipt of this notification, the Department may permit the continuance of the operation for a period not to exceed 10 days provided that written application is made to the Department. Such application shall be made within 24 hours of the malfunction or within such other time period as the Department may specify. In cases of major equipment failure, additional time period may be granted by the Department provided a corrective program has been submitted by the person and approved by the Department. The Department shall be notified when the condition causing the malfunction has been corrected.

1.130 ~~TIME SCHEDULE FOR COMPLIANCE~~

~~Except as otherwise specified, compliance with the provisions of these regulations shall be according to the following time schedule:~~

~~1.131 New Installations~~

~~All new installations shall comply as of going into continuous routine operation for its intended purpose.~~

~~1.132 Existing Installations~~

~~All existing installations not in compliance as of the effec-~~

662<

3745-15-06 Malfunction of equipment; scheduled maintenance; reporting.

(A) In the case of shutdown of air pollution control equipment for necessary scheduled maintenance unaccompanied by shutdown of the pollution source, the intent to shut down such equipment shall be reported to the Board at least twenty-four (24) hours prior to the planned shutdown. Such prior notice shall include, but is not limited to the following:

(1) Identification and location of the specific facility to be taken out of service.

(2) The expected length of time that the air pollution control equipment will be out of service.

(3) The nature and quantity of emissions of air contaminants likely to occur during the shutdown period.

(4) Measures such as the use of off-shift labor and equipment that will be taken to minimize the length of the shutdown period.

(5) The reasons that it would be impossible or impractical to shut down the source operation during the maintenance period.

(6) A demonstration that any interim control measures have reduced or will reduce emissions from the source during the shutdown period.

(B) In the event that any emission source, air pollution control equipment, or related facility breaks down in such a manner as to cause the emission of air contaminants in violation of this article, the person responsible for such equipment shall immediately notify the Board of such failure or breakdown and provide a statement giving all pertinent facts, including the estimated duration of the breakdown. The Board shall be notified when the condition causing the failure or breakdown has been corrected and the equipment is again in operation.

(C) The Board retains the responsibility to evaluate any report submitted pursuant to this section. Upon a determination that the shutdown was or has become avoidable, or was induced or prolonged in bad faith, or that the requirements of 3745-15-06 (A) (4), (5), and (6) have not been fulfilled, then the Board shall take appropriate action.

Effective Date: February 15, 1972
Former Rule Number: AP-2-06
Promulgated under: RC Chap. 119
Statutory Authority: RC§ 3704.03

Regulation No. 11

Malfunction of Equipment, Reports Required

11.1 In the case of shutdown of air pollution control equipment for necessary scheduled maintenance, the intent to shut down such equipment shall be reported to the Commissioner at least twenty-four (24) hours prior to the planned shutdown. Such prior notice shall include, but is not limited to the following:

(a) Identification of the specific facility to be taken out of service as well as its location and permit number.

(b) The expected length of time that the air pollution control equipment will be out of service.

(c) The nature and quantity of emissions of air contaminants likely to occur during the shutdown period.

(d) Measures such as the use of off-shift labor and equipment that will be taken to minimize the length of the shutdown period.

(e) The reasons that it would be impossible or impractical to shut down the source operation during the maintenance period.

11.2 In the event that any emission source, air pollution control equipment, or related facility breaks down in such a manner as to cause the emission of air contaminants in violation of these regulations, the person responsible for such equipment shall immediately notify the Commissioner of such failure or breakdown and provide a statement giving all pertinent facts, including the estimated duration of the breakdown. The Commissioner shall be notified when the condition causing the failure or breakdown has been corrected and the equipment is again in operation.

7/20/71

~~Requirements~~

~~**340-21-060** (1) When fugitive emissions escape from a building or equipment in such a manner and amount as to create nuisance conditions or to violate any regulation, the Department may, in addition to other means of obtaining compliance, order that the building or equipment in which processing, handling and storage are done be tightly closed and ventilated in such a way that air contaminants are controlled or removed before discharge to the open air.~~

~~(2) No person shall cause, suffer, allow, or permit any materials to be handled, transported, or stored; or a building, its appurtenances, or a road to be used, constructed, altered, repaired or demolished; or any equipment to be operated, without taking reasonable precautions to prevent particulate matter from becoming airborne. Such reasonable precautions shall include, but not be limited to the following:~~

~~(a) Use, where possible, of water or chemicals for control of dust in the demolition of existing buildings or structures, construction operations, the grading of roads or the clearing of land;~~

~~(b) Application of asphalt, oil, water, or other suitable chemicals on unpaved roads, materials stockpiles, and other surfaces which can create airborne dusts;~~

~~(c) Full or partial enclosure of materials stockpiles in cases where application of oil, water, or chemicals are not sufficient to prevent particulate matter from becoming airborne;~~

~~(d) Installation and use of hoods, fans, and fabric filters to enclose and vent the handling of dusty materials;~~

~~(e) Adequate containment during sandblasting or other similar operations;~~

~~(f) Covering, at all times when in motion, open bodied trucks transporting materials likely to become airborne;~~

~~(g) The prompt removal from paved streets of earth or other material which does or may become airborne.~~

~~Statutory Authority:~~
~~**Hist:** Filed 2-15-72 as DEQ 37, Eff. 3-1-72~~

Upset Conditions

Introduction

340-21-065 Emission of air contaminants in excess of applicable standards as a result of scheduled maintenance or equipment breakdown shall not be considered a violation of said standards provided the conditions of sections 340-21-070 and 340-21-075 are met.

Statutory Authority:
Hist: Filed 2-15-72 as DEQ 37, Eff. 3-1-72

Scheduled Maintenance

340-21-070 (1) In the case of shutdown of air pollution control equipment for necessary scheduled maintenance, the intent to shut down such equipment shall be reported to the Department at least twenty-four (24) hours prior to the planned shutdown. Such prior notice shall include, but is not limited to the following:

(a) Identification of the specific facility to be taken out of service.

(b) The expected length of time that the air pollution control equipment will be out of service.

(c) The nature and quantity of emissions of air contaminants likely to occur during the shutdown period.

(d) Measures, such as the use of offshift labor and equipment, that will be taken to minimize the length of the shutdown period, and where practical, minimize air contaminant emissions.

(e) The reasons that it would be impractical to shut down the source operation during the maintenance period.

(2) Additionally, in the case of maintenance scheduled more frequently than one time in a 90 day period, requiring shutdown of air pollution control equipment, or for any maintenance requiring shutdown of air pollution control equipment for a time period longer than 48 hours, prior approval of the maintenance program may be required by the Department. Application for approval shall be submitted in writing within 30 days after a request by the Department and shall include, in addition to items (a) through (e) in subsection (1) above, specific information as to the frequency and the necessity of the scheduled maintenance. Approval of the program by the Department shall be based upon a determination that the proposed maintenance schedule is necessary and that all reasonable precautions have been taken to minimize the extent and frequency of air contaminant emissions in excess of applicable standards.

(3) No scheduled maintenance resulting in the emission of air contaminants in violation of applicable standards shall be performed during any period in which an Air Pollution Alert, Air Pollution Warning, or Air Pollution Emergency has been declared.

Statutory Authority:
Hist: Filed 2-15-72 as DEQ 37, Eff. 3-1-72

Malfunction of Equipment

340-21-075 In the event that any emission source, air pollution control equipment or related facility malfunctions or breaks down in such a manner as to cause the emission of air contaminants in violation of applicable standards, the person responsible for such equipment shall:

(1) Notify the Department, by telephone or in person, of such failure or breakdown within 1 hour of the occurrence, or as soon as is reasonably possible, giving all pertinent facts including the estimated duration of the breakdown.

(2) With all practicable speed, initiate and complete appropriate action to correct the conditions, and to reduce the frequency of such occurrences.

(3) Cease or discontinue operation of the equipment or facility no later than 48 hours after the beginning of the breakdown or upset period if the malfunction is not corrected within that time. The

Director may, for good cause shown, which shall include but not be limited to, equipment availability, difficulty of repair or installation, and nature and amount of the emission, authorize the extension of the operation period beyond 48 hours under this subsection for a reasonable period of time as determined by him to be necessary to correct the malfunction or breakdown.

(4) In the event an Air Pollution Alert, Air Pollution Warning, or Air Pollution Emergency is declared, or in the event the nature or magnitude of emissions from malfunctioning equipment is deemed by the Department to present an imminent and substantial endangerment to health, immediately proceed to cease or discontinue operation of the equipment or facility.

(5) Notify the Department when the condition causing the failure or breakdown has been corrected, and upon request, submit a written statement of the causes and the action taken to prevent future similar upset or breakdown conditions.

Statutory Authority:
Hist: Filed 2-15-72 as DEQ 37, Eff. 3-1-72

2.3 (Reserved)

~~2.4 Emission data availabe to public; presentation~~

~~2.4.1 All emission data obtained by the Board, including data reported pursuant to section 2.2 and data obtained in any other way, shall be availabe for public inspection and may also be made available to the public in any additional ways that the Board may deem appropriate.~~

~~2.4.2 All such emission data shall be presented in such a manner as to show the relationship between measured or estimated emissions and the emissions allowable under applicable rules and regulations.~~

2.5 Malfunction of equipment; reporting

✓ 2.5.1 In the case of shutdown of air pollution control equipment for necessary scheduled maintenance, the intent to shut down such equipment shall be reported to the Board at least 24 hours prior to the planned shutdown. Such prior notice shall include, but is not limited to the following:

A. Indentification of the specific facility to be taken out of service as well as its location and permit number.

B. The expected lenght of time that the air pollution control equipment will be out of service.

C. The nature and quantity of emissions of air pollutants likely to be emitted during the shutdown period.

D. Measures such as the use of off-shift labor and equipment that will be taken to minimize the length of the shutdown period.

E. The reasons that it would be impossible or impractical to shut down the source operation during the maintenance period.

✓ 2.5.2 In the event that any emission source, air pollution control equipment, or related facility breaks down in such a manner as to cause the emission of air pollutants in violation of applicable rules and regulations, the person responsible for such equipment shall immediately notify the Board of such failure or breakdown and provide a statement giving all pertinent facts, including the estimated duration of the breakdown. The Board shall be notified when the condition causing the failure or breakdown has been corrected and the equipment is again in operation. Upon request of the Board, this notification shall be followed by a written report of the incident. This report shall include specific data concerning the affected equipment, date and hour of the occurence, causes of the malfunction, and corrective measures taken.

~~2.6 Air pollution emergencies~~

~~This regulation is designed to prevent the excessive buildup of air pollutants during air pollution episodes, thereby preventing the occurrence of an emergency due to the effects of these pollutants on the health of persons.~~

~~2.6.1 Episode criteria. The Board shall publicly announce the existence of an air pollution alert, air pollution warning, or air pollution emergency whenever the Board determines that the accumulation of air pollutants in any place is attaining or has attained levels which could, if such levels are sustained or exceeded, lead to a substantial threat to the health of persons. In making this determination with respect to SO_2 and particulate matter, the Board will be guided by the following:~~

~~A. "Air Pollution Forecast". An internal watch by the staff of the Board shall be actuated by a National Weather Service advisory that Atmospheric Stagnation Advisory is in effect or the equivalent local forecast of stagnant atmospheric conditions.~~

~~B. "Alert". The Alert level is that concentration of pollutants at which first stage control actions is to begin. An Alert will be declared when any one of the following levels is reached at any monitoring site:~~

~~—SO_2—800 ug/m^3 (0.28 p.p.m.), 24-hour average.~~

~~—Particulate—3.0 COHs or 375 ug/m^3 24-hour average.~~

~~—SO_2 and particulate combined—product of SO_2 p.p.m. 24-hour average, and COHs equal to 0.2 or product of SO_2 ug/m^3 24-hour average, and particulate ug/m^3 24-hour average equal to 65 X 10^3~~

~~and meteorological conditons are such that pollutant concentrations can be expected to remain at the above levels for 12 or more hours or increase unless control actions are taken.~~

~~C. "Warning". The warning level indicates that air quality is continuing to degrade and that additonal control actions are necessary. A warning will be declared when any one of the following levels is reached at any monitoring site:~~

~~– SO_2 –1600 μg/m^3 (0.56 p.p.m.), 24-hour average.~~

~~Particulate –5.0 COHs or 625 ug/m^3 24-hour average.~~

RHODE ISLAND DEPARTMENT OF HEALTH

DIVISION OF AIR POLLUTION CONTROL

AIR POLLUTION CONTROL REGULATION NO. 16

OPERATION OF AIR POLLUTION CONTROL SYSTEMS

16. Operation of Air Pollution Control Systems

~~16.1 Approved Operation~~

~~Any air pollution control system shall be operated according to its design specifications whenever the source on which it is installed is in operation or is emitting air contaminants.~~

16.2 Malfunctions

In the case of malfunction of any air pollution control system, all reasonable measures shall be taken to assure resumption of the designed control efficiency as soon as possible. In the event that the malfunction of an air pollution control system is expected or may reasonably be expected to continue for longer than 24 hours and if the owner or operator wishes to operate the source on which it is installed at any time beyond that period, the Director shall be petitioned for a variance under Section 23-25-15 of the General Laws of Rhode Island, as amended. Such petition shall include, but is not limited to, the following:

(a) Identification of the specific air pollution control system and source on which it is installed.

(b) The expected period of time that the air pollution control system will be malfunctioning or out of service.

(c) The nature and quantity of air contaminants likely to be emitted during said period.

(d) Measures that will be taken to minimize the length of said period.

(e) The reasons that it would be impossible or impractical to cease the source operation during said period.

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1.12 *MALFUNCTION OF EQUIPMENT REPORTING*

1.12.1 *Equipment Shutdown*

In the case of shutdown of air pollution control equipment for necessary scheduled maintenance, the intent to shut down such equipment shall be reported to the Director at least twenty-four (24) hours prior to the planned shutdown. Such prior notice shall include, but is not limited to the following:

(1) Identification of the specific facility to be taken out of service as well as its location and permit number.

(2) The expected length of time that the air pollution control equipment will be out of service.

(3) The nature and quantity of emissions of air pollutants likely to be emitted during the shutdown period.

(4) Measures, such as the use of off-shift labor and equipment, that will be taken to minimize the length of the shutdown period.

(5) The reasons why it would be impossible or impractical to shut down the source operation during the maintenance period.

1.12.2 *Equipment Breakdown*

In the event that any emission source, air pollution control equipment or related facility breaks down in such a manner to cause the emission of air pollutants in violation of applicable rules and regulations, the person responsible for such equipment shall immediately notify the Director of such failure or breakdown and provide a statement giving all pertinent facts, including the estimated duration of the breakdown. The Director shall be notified when the condition causing the failure or breakdown has been corrected, and the equipment is again in operation.

~~1.13 *TIME SCHEDULE FOR COMPLIANCE*~~

~~Except as otherwise specified, compliance with the provisions of these regulations shall be as follows:~~

~~1.13.1 *New Installations*~~

~~All new installations shall be in compliance as of going into operation. A sixty (60) day period will be granted to confirm compliance with these regulations.~~

~~1.13.2 *Existing Installations*~~

~~All existing installations not in compliance as of the effective date of these regulations shall be in compliance within one (1) year of the effective date of these regulations, with the exception that existing wood waste burners shall be in compliance within eighteen (18) months of the effective date of these regulations. The operation of an existing source not in compliance after the applicable compliance period is prohibited unless the owner or person responsible for the operation of the installation shall have submitted to the Commission in the form or manner satisfactory to it, a variance and/or permit application and schedule to contain a date, on or before which full compliance will be attained, and such other information as the Commission may require. If approved by the Commission, such date will be the date on which the person shall comply or cease operation. The Commission may require persons submitting such a program to submit periodic reports on progress in achieving such a program to submit periodic reports on progress in achieving such compliance. All compliance schedules under these regulations shall have a final compliance date which is no later than July 31, 1975, for achievement of the ambient air quality standards.~~

~~1.14 *AIR POLLUTION NUISANCES PROHIBITED*~~

~~1.14.1 No person shall cause or permit the discharge from any source whatsoever such quantities of air contaminants or other materials which cause nuisances to any person or to the public.~~

~~1.14.2 Nothing in any other part of these regulations concerning emission of air contaminants or any other regulation relating to air pollution shall in any manner be construed as authorization or legalizing the creation or maintenance of a nuisance as described in 1.14.1.~~

~~PART 2~~

~~AMBIENT AIR QUALITY STANDARDS~~

~~2.1 *AIR QUALITY GUIDELINES*~~

~~Air quality shall be such that it will not cause or tend to cause the following:~~

~~(1) The health of even sensitive or susceptible segments of the population to be adversely affected or;~~

~~(2) concentrations of pollutants that cause public nuisance or annoyance or;~~

~~(3) damage to buildings, property, animals, plants, forest and agricultural crops to occur or;~~

~~(4) visibility to be significantly reduced or;~~

~~(5) metals or other materials to be significantly corroded or damaged or;~~

~~(6) natural scenery to be obscured or;~~

~~(7) enjoyment of life or property to be interfered with.~~

~~2.2. *AMBIENT AIR QUALITY STANDARDS*~~

~~2.2.1 *Particulates and Gases*~~

~~The ambient air quality standards listed in Table 2.1 define the limits of air contamination by particulates and gases, above which limits the ambient air is hereby declared to be unacceptable and require air pollution control measures. These standards apply to the entire State of South Dakota. The limits stated include normal background levels of particulates and gases.~~

~~2.2.2 *Other Air Contaminants*~~

~~The ambient air shall not contain air contaminants in such quantities and duration as are or tend to be unreasonably injurious to human health or welfare, animal or plant life, or property, or would unreasonably interfere with the enjoyment of life or property.~~

~~2.3 *METHODS OF SAMPLING AND ANALYSIS*~~

~~Air contaminants shall be measured by the method shown in Table 2.2 or a method approved by the Commission.~~

~~The sampling and analytical procedures used and the numbers, duration, and location of samples to be taken to measure ambient levels of air contaminants shall be consistent with obtaining accurate results which are statistically significant and representative of the conditions being evaluated.~~

~~2.4 *DEGRADATION OF AMBIENT AIR HAVING A HIGHER QUALITY THAN THAT SET FORTH IN 2.2 RESTRICTED.*~~

~~Ambient air whose quality as of the effective date of these regulations is higher than the standards set form in these regulations shall be maintained at the higher quality~~

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CHAPTER 1200-3-5

VISIBLE EMISSIONS

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~~1200-3-5-.01 GENERAL STANDARD~~

~~No person shall cause, suffer, allow or permit discharge of a visible emission from any air contaminant source with a density greater than number one (1) of the Ringelmann Chart or an opacity in excess of twenty (20) percent for an aggregate of more than five (5) minutes in any one (1) hour or more than twenty (20) minutes in any twenty-four (24) hour period.~~

~~Authority: T.C.A. Section 533412. Administrative History. Original Rule certified June 7, 1974. Amended April 21, 1976. Amended effective February 9, 1977.~~

1200-3-5-.02 EXCEPTIONS

(1) Due allowance shall be made for visible emissions in excess of that permitted in rules .01 and .05 of this Chapter which are necessary or unavoidable due to start-up, shutdown, breakdown, or upset conditions provided the owner or operator shall maintain a running, current log of such start-up, shutdown, breakdown, or upset condition showing the time at which such condition began and ended and that such record shall be available to the Technical Secretary or his representative upon his request.

(2) In the event of a dispute between the owner or operator of an air contaminant source and the Tennessee Air Pollution Control Division as to what consitiutes due allowance, the Technical Secretary may conduct an Administrative Hearing for the determination of this matter.

Authority: T.C.A. Section 53-3412. Administrative History. Original Rule certified June 7, 1974. Amended April 21, 1976. Amended effective February 9, 1977.

1200-3-5-.03 ~~METHOD OF RECORDING~~

~~(1) In testing compliance with the rules of this chapter visible emissions tending to produce a black plume will be evaluated in terms of the Ringelmann scale or equivalent opacity while visible emissions tending to produce a non-black plume will be evaluated in terms of equivalent opacity and expressed as percent opacity.~~

(vi) ~~Owners or operators of air contaminant sources, subject to subparagraph (1)(b) of this Rule are required to use the procedure outlined in the *Federal Register*, Vol. 40, No. 194 (Appendix B, Paragraph 50) for converting monitoring data to units of the standard where necessary.~~

~~Authority: T.C.A. Section 53-3412. Administrative History. Original Rule certified June 7, 1974. Amended effective February 9, 1977.~~

1200-3-10-.03 MALFUNCTION OF EQUIPMENT, REPORTS REQUIRED.

(1) In the case of shutdown of air pollution control equipment for necessary scheduled maintenance, the intent to shut down such equipment shall, except as provided in paragraph .03, (2), of this Chapter, be reported to the Technical Secretary at least twenty-four (24) hours prior to the planned shutdown. Such prior notice shall include, but is not limited to the following:

(a) Identification of the specific facility to be taken out of service, as well as its location and permit number.

(b) The expected length of time that the air pollution control equipment will be out of service.

(c) The nature and quantity of emissions of air contaminants likely to occur during the shutdown period.

(d) Measures such as the use of off-shift labor and equipment that will be taken to minimize the length of the shutdown period.

(2) EXCEPTIONS TO SHUTDOWN REPORTING REQUIREMENTS.

(a) The reports described in paragraph .03,(1) of this Chapter shall not be required when, during the shutdown referred to therein, the air contaminants are handled through alternate air pollution control equipment.

(b) When shutdowns referred to in paragraph .03, (1) of this Chapter are on a routine schedule, the report to the Technical Secretary may be furnished on an annual basis and shall list the dates and times of the routine scheduled shutdowns during the following year.

(3) When any emission source, air pollution control equipment, or related facility breaks down in such a manner as to cause the emission of air contaminants for an anticipated or actual duration of at least twenty-four (24) hours in violation of these regulations, or of sufficient duration to cause damage to property or public health, the person responsible for such equipment shall immediately notify the Technical Secretary of such failure or breakdown and provide a statement giving all pertinent

facts, including the estimated duration of the breakdown. The Technical Secretary shall be notified when the condition causing the failure or breakdown has been corrected and the equipment is again in operation.

Authority: T.C.A. Section 53-3412. Administrative History. Original Rule certified June 7, 1974. Rule Amended: filed May 17, 1974, effective June 16, 1974.

~~.006. Traffic Hazard. No person shall discharge from any source whatsoever such quantities of air contaminants, uncombined water, or other materials which cause or have a tendency to cause a traffic hazard or an interference with normal road use.~~

.007. Notification Requirements for Major Upset. The Executive Director and the appropriate local air pollution control agency shall be notified as soon as possible of any major upset condition which causes or may cause an excessive emission that contravenes the intent of the Texas Clean Air Act and/or the regulations of the Board. A list of persons to contact may be obtained from the Executive Director upon request.

.008. Notification Requirements for Maintenance. The Executive Director and the appropriate local air pollution control agency shall be notified in writing at least ten (10) days prior to any planned maintenance, start-up, or shut-down which will or may cause an excessive emission that contravenes the intent of the Texas Clean Air Act and/or the regulations of the Board. If ten (10) days notice cannot be given due to an unplanned occurrence, notice shall be given as soon as practical prior to the shut-down.

~~.009. Sampling.~~

~~(1) Any person owning or operating a source which emits air contaminants into the air of this State shall, upon request by the Board or the Executive Director, conduct sampling to determine the opacity, rate, composition, and/or concentration of such emissions. Sampling shall be conducted at a frequency and within a period of time which are reasonable as specified by the Board or Executive Director. The sampling method shall be specified by the Board or the Executive Director and, further, the sampling shall be conducted so as to reflect with reasonable accuracy the above listed characteristics of such emissions.~~

~~(a) Any person affected by Rule 131.01.00.009(1) may request the Executive Director to approve alternate sampling techniques or other means to determine the opacity, rate, composition, and/or concentration of emissions. The Executive Director may approve such alternate methods or means if it can be demonstrated that such alternatives will be substantially equivalent to the sampling methods specified by the Executive Director or the Board.~~

~~2.2.3 No owner or operator of a gasoline powered vehicle shall allow, cause or permit the emission of visible contaminants except for starting motion no farther than 100 yards or for stationary operation not exceeding 3 minutes in any hour.~~

~~2.2.4 Emissions from diesel engines manufactured after January 1, 1973 shall be of a shade or density no darker than a No. 1 Ringelmann Chart (20% black), or an equivalent opacity, except for starting motion no farther than 100 yards or for stationary operation not exceeding 3 minutes in any hour.~~

~~2.2.5 Emissions from diesel engines manufactured before January 1, 1973 shall be of a shade or density no darker than a No. 2 Ringelmann Chart (40% black), or equivalent opacity, except for starting motion no farther than 100 yards or for stationary operation not exceeding 3 minutes in any hour.~~

2.2.6 Exceptions

a. Excessive emissions resulting from the unavoidable break-down of equipment or procedures must be reported immediately (within 24 hours) to the Executive Secretary. Within five days of the beginning of such an incident, a written report shall be submitted to the Executive Secretary which shall include the cause and nature of the event, estimated quantity of pollutant, time of emissions, and steps taken to control the emission and to prevent recurrence. Such emission shall not be deemed in violation providing this report is considered acceptable to the Executive Secretary. If such emissions are predictable, they are covered by the variance procedure.

b. When conducting a procedure or using equipment necessary to the operation of a process other than planned maintenance such as, but not limited to, building a new fire, tube blowing, initial warm-up or start-up locomotives, or cleaning grates, the limits specified in these regulations may be exceeded when it can be demonstrated to be unavoidable.

Emissions exceeding the standard as the result of planned maintenance on an air cleaning unit shall not be deemed a violation provided the Executive Secretary is notified prior to the shut-down of the control unit and he determines that simultaneous shut-down of the air pollution source is not practical.

c. For all other excessive emissions the variance procedure may be employed.

~~d. An emission failing to meet the standard because of the effect of uncombined water shall not be in violation.~~

~~2.2.7 Compliance Method - emissions shall be brought into compliance with these requirements by reduction of the total weight of contaminants discharged per unit of time rather than by dilution of emissions with clean air.~~

2.5 Emissions of Sulfur Compounds

~~2.5.1 New installations with a potential for emission of sulfur compounds as gaseous or mist effluent shall control sulfur oxide emissions as required to avoid exceeding National Primary and Secondary Ambient Air Quality Standards and Federal Standards of Performance for New Stationary Sources.~~

~~2.5.2 Existing installations shall control emissions of sulfur compounds as required to insure that National Ambient Air Quality Standards shall never be exceeded. Applicable emission limitations shall never be exceeded, except as hereinafter provided.~~

2.5.3 In both new and existing installations, excessive emissions resulting from the unavoidable breakdown of equipment or the unavailability of replacement equipment must be reported immediately (within 24 hours) to the Executive Secretary. Within five days of the beginning of such an incident a written report shall be submitted to the Executive Secretary which shall include the cause and nature of the event, estimated quantity of pollutant, time of emissions and steps taken to prevent recurrence. Resultant emission shall not be deemed in violation of emissions control requirements providing the reports are acceptable to the Executive Secretary.

2.5.4 In both new and existing installations the Executive Secretary shall be notified prior to each shut down of a desulfurization unit for scheduled maintenance.

2.5.5 In both new and existing installations any gases by-passing a desulfurization unit during a period of scheduled maintenance shall be otherwise processed by available gas cleaning equipment normally in use preceding the desulfurization unit.

2.5.6 As interim measures which shall apply until July 31, 1979, existing non-ferrous smelters shall utilize the following procedures to achieve maximum control of sulfur oxide emissions and to insure compliance with the requirements of Section 2.5.2: (a) not discharge to the atmosphere sulfur oxides containing more that 3750 tons per month of sulfur, nor discharge to the atmosphere more than 14% per month of input sulfur to their process (feed driers, reactors, converters), whichever is less. This monthly limitation may be exceeded in the case of shut down of control facilities for maintenance or unavoidable breakdown as described in Section 2.5.3 and Section 2.5.4, above; however, it may not be exceeded on an annual basis. Regardless of the number and frequency of equipment breakdowns or planned or unplanned maintenance as described in Section 2.5.3 and Section 2.5.4, above, the running annual average (average of any 12 consecutive months) shall never exceed 3750 tons/month of sulfur or 14% of input sulfur; (b) employ the best engineering practices' to capture fugitive emissions; (c) use available desulfurization units and other gas treatment facilities to the maximum extent practical; (d) make necessary modification in production and treatment facilities, as outlined in plans, specifications and compliance schedules approved by the Executive Secretary, and provide space for installation of additional desulfurization and other gas cleaning units which may be found necessary by experience after such modification to meet applicable emission limitations; and (e) employ a system, approved by the Committee and continuously available for monitoring and predicting ambient air concentrations, and limiting emissions of sulfur compounds by curtailment of operations to insure that short term ambient air quality standards are never exceeded.

~~A permit will not be required for:~~

~~(i) The installation or alteration of air pollutant detectors, air pollutant recorders, combustion controllers or combustion shutoff controls.~~

~~(ii) The installation and operation of air-conditioning or ventilating systems not designed to remove air pollutants generated by or released from an *affected facility*.~~

~~(iii) The installation and operation of low capacity *fuel burning equipment*, such as: process smoke house generators; devices that use gas as a fuel for air conditioning or heating water; *fuel burning equipment* using solid fuel with a maximum *heat input* of less than 350,000 Btu per hour; or *fuel burning equipment* using gaseous and/or liquid fuel with a maximum *heat input* of less than 1,000,000 Btu per hour.~~

~~(iv) The installation and operation of internal combustion engines aggregating under 3000 hp at a single location.~~

~~(v) The installation and operation of laboratory equipment used exclusively for chemical of physical analysis.~~

~~(vi) The installation and operation of *sources* of minor significance.~~

~~(vii) *Open burning — open burning* permits are obtained under Section 4.11 (h).~~

~~(2) *Indirect Sources.*~~

~~A permit will not be required for the following:~~

~~(i) Any airport, the *construction* or *modification* of which is expected to result in the following activity within 10 years of *construction* or *modification:*~~

~~*a* New airport: less than 50,000 *aircraft operations* per year by regularly scheduled air carriers, or use by less than 1,600,000 passengers per year.~~

~~*b* Modified airport: Increase of less than 50,000 *aircraft operations* per year by regularly scheduled air carriers over the existing volume of *aircraft operations*, or increase of less than 1,600,000 passengers per year.~~

~~(ii) Any airport, the *construction* or *modification* of which is not designed or planned to be utilized by regularly scheduled air carriers.~~

~~(iii) Single-family residential developments.~~

~~(iv) In an SMSA~~

~~*a Indirect Sources*, other than *highway projects* and airports, the operation of which when completed or modified will attract fewer than 700 additional vehicles to the roadways and parking facilities servicing the *indirect source* over the 1-hour period during which the maximum number of vehicles is anticipated and fewer than 1750 additional vehicles to the roadways and parking facilities serving the *indirect source* during the continuous 8-hour period during which the maximum number of vehicles is expected.~~

~~*b* Any new or modified *highway project* with less than the following maximum expected average annual daily traffic volume within 10 years of *construction* or *modification:*~~

~~*1* New *highway project:* 20,000 vehicles per day.~~

~~*2* Modified *highway project:* 10,000 vehicles per day increase over existing traffic volume on such *highway project.*~~

~~(v) Outside an SMSA~~

~~*a Indirect sources*, other than *highway projects* and airports, the operation of which when completed or modified will attract fewer than 1400 additional vehicles to roadways and parking facilities serving the *indirect source* over the 1-hour period during which the maximum number of vehicles is anticipated and fewer than 3500 additional vehicles to roadways and parking facilities serving the *indirerct source* during the continuous 8-hour period during which the maximum number of vehicles is expected.~~

~~*b* Any new or modified *highway project.*~~

~~(3) Where an *indirect source* is constructed or modified in increments which individually are not subject to approval under this section, and which are not part of a program of *construction* or *modification* in planned incremental phases approved by the *Board*, all such increments shall be added together for determining the applicability of this paragraph.~~

~~(h) Revocation of Permit~~

~~A permit granted pursuant to this section shall become invalid if a program of continuous construction or modification is not commenced within 24 months from the date the permit is granted or if a program of construction or modification is discontinued for a period of 12 months or more. The Board may extend such time period upon a satisfactory showing that an extension is justified.~~

~~(i) Existence of Permit No Defense~~

~~The existence of a permit under this section shall not constitute a defense to a violation of the *Virginia Air Pollution Control Law* or these regulations and shall not relieve any *owner* of the responsibility to comply with any applicable regulations, laws, ordinances and orders of the governmental entities having jurisdiction.~~

~~(j) Parking Management Supply Alternative~~

~~(1) A local governmental entity, local *air pollution* control agency or regional planning agency may submit, at any time, a comprehensive parking management plan as an alternative to the provisions of this section.~~

~~(2) The *Board* may approve such plan if it finds that:~~

~~(i) The governmental entity or agency submitting the plan has full and adequate legal authority to enforce compliance with its requirements.~~

~~(ii) The provisions of the plan are consistent with the substantive and procedural provisions of this section.~~

~~(iii) The plan has been adopted after a public hearing held in conformity with the requirements of paragraphs (a)(5) and (e) (1) of this section.~~

~~(3) Upon the effective date of any approved local comprehensive parking management plan, such plan shall exempt affected *sources* from applicable provisions of this section.~~

~~(k) Notwithstanding the exemptions, no *owner* or other *person* shall circumvent the requirements of this section by causing or allowing a pattern of ownership or development over a geographic area of an *indirect source*, which, except for the pattern of ownership or development, would otherwise require an *indirect source* permit.~~

2.34 FACILITY AND CONTROL EQUIPMENT MAINTENANCE OR MALFUNCTION

(a) At all times, including periods of *startup, shutdown* and *malfunction, owners* shall, to the extent practicable, maintain and operate any *affected facility* including associated *air pollution* control equipment or monitoring equipment in a manner consistent with good *air pollution* control practice of minimizing emissions.

(b) In case of *shutdown* and/or bypassing of *air pollution* control equipment for necessary scheduled maintenance which results in *excess* emissions for more than 1 hour, the intent to shut down such equipment shall be reported to the *Board* and local *air pollution* control agency, if any, at least 24 hours prior to the planned *shutdown*. Such prior notice shall include, but is not limited to, the following:

(1) Identification of the specific facility to be taken out of service as well as its location and permit and/or registration number.

(2) The expected length of time that the *air pollution* control equipment will be out of service.

(3) The nature and quantity of emissions of air pollutants likely to occur during the *shutdown* period.

(4) Measures that will be taken to minimize the length of the *shutdown* or to negate the effect of the outage of the *air pollution* control equipment.

(c) In the event that any affected facility or related *air pollution* control equipment *malfunctions* in such a manner that may cause *excess emissions* for more than 1 hour, the *owner* shall, as soon as practicable but no later than 4 daytime business hours, notify the *Board* by telephone or telegraph of such failure or *malfunction* and shall then provide a written statement giving all pertinent facts, including the estimated duration of the breakdown. When the condition causing the *malfunction* has been corrected and the equipment is again in operation, the *owner* shall notify the *Board*.

(d) In the event that the breakdown period cited in paragraph (c) of this section, exists for 30 or more days, the *owner* shall, within 30 days of the *malfunction* and semi-monthly thereafter until the *malfuction* is corrected, submit to the *Board* a written report containing the following:

(1) Identification of the specific facility that is affected as well as its location and permit and/or registration number.

(2) The expected length of time that the *air pollution* control equipment will be out of service.

(3) The nature and quantity of emissions of air pollutants likely to occur during the breakdown period.

(4) Measures to be taken to reduce emissions to the lowest amount practicable during the breakdown period.

(5) A statement as to why the *owner* was unable to obtain said repair parts or perform said repairs which would allow compliance with the provisions of these regulations within 30 days of the *malfunction*.

(6) An estimate, with reasons therefor, of the duration of the shortage of repair or repair parts which would allow compliance with the provisions of these regulations.

(7) Any other pertinent information as may be requested by the Board.

(e) The procedural requirements of paragraph (d) of this section shall be applicable 6 months after the date of the *malfunction*. Should the breakdown period exist beyond the 6-month period, the *owner* may apply for a variance in accordance with Section 2.05(a).

~~(f) The following are special provisions which govern facilities which are subject to the provisions of Part VI:~~

~~(1) Nothing in this section shall be construed as allowing any such facility to operate in violation of applicable *emission standards* except that all such facilities shall be subject to the reporting and notification procedures in this section.~~

~~(2) Any facility which is subject to the provisions of the subparts listed in Section 6.11 shall shut down immediately if it is unable to meet the applicable *emission standards*, and it shall not return to operation until it is able to operate in compliance with the applicable *emission standards*.~~

~~(3) Notwithstanding the foregoing, any facility which is subject to the provisions of Rule HP-2 shall shut down immediately upon request of the *Board* if the emissions therefrom increase in any amount, because of a bypass, *malfunction* or *shutdown* of the facility or its associated *air pollution* control equipment; and such facility shall not return to operation until it and the associated *air pollution* control equipment are able to operate in a proper manner.~~

(g) No violation of applicable *emission standards* shall be deemed to have taken place if such *excess emissions* or cessation of monitoring activities is due to a *malfunction* provided that:

(1) The procedural requirements of this section are met,

(2) The *owner* has taken expedient and reasonable measures to minimize emissions during the breakdown period, and

(3) The *owner* has taken expedient and reasonable measures to correct the *malfunction* and return the *source* to a normal operation.

(4) The *source* is in compliance at least 90 percent of the operating time over the most recent 12-month period.

(h) Nothing in this section shall be construed as giving an *owner* the right to increase temporarily the emission of pollutants or to circumvent the *emission standards* or monitoring requirements otherwise provided in these regulations.

~~PART III — AMBIENT AIR QUALITY STANDARDS~~

~~3.01 GENERAL~~

~~(a) The provisions of this part, unless specified otherwise, shall be applicable throughout the Commonwealth of Virginia.~~

~~(b) *Ambient air quality standards* are required to assure that ambient concentrations of air pollutants are consistent with established criteria and such standards shall serve as the basis for effective and reasonable management of the air resources of the Commonwealth of Virginia.~~

~~(c) Primary *ambient air quality standards* define levels of *air quality* which, allowing an adequate margin of safety, are necessary to protect the public health. Secondary *ambient air quality standards* define more stringent levels of *air quality* which are necessary to protect the public welfare from any known or anticipated adverse effects associated with the presence of air pollutants in~~

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~~(b) [Hydrogen Sulfide.] No person shall cause or permit the emission of hydrogen sulfide from any premises in such manner and amounts that the concentrations attributable to such emissions in the ambient air at any occupied place beyond the premises on which the source is located exceed 0.03 parts per million by volume for any averaging period of 30 or more minutes on more than two occasions in any 5 days.~~

~~§ 204-27. Air pollution nuisances prohibited~~

~~(a) No person shall cause or permit the discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, annoyance to any considerable number of persons or to the public or which endanger the comfort, repose, health, or safety of any such persons or the public or which cause or have a tendency to cause injury or damage to business or property.~~

~~(b) Nothing in any other regulation concerning emission of air contaminants or any other regulations relating to air pollution shall in any manner be construed as authorizing or legalizing the creation or maintenance of a nuisance as described in subsection (a) of this division.~~

~~§ 204-28. Internal combustion engine limits~~

~~No person shall operate, or cause to be operated, upon any street, highway, public place or private premises within the Virgin Islands, any internal combustion engines, while stationary or moving, which emit from any source of emission whatsoever any air contaminant for a period longer than 10 seconds with the aggregate not to exceed three minutes in any one hour which is:~~

~~(a) As dark or darker than in shade as that designated No. 1 on the Ringelmann Chart, as published by the United States Bureau of Mines or~~

~~(b) Of such opacity as to obscure an observer's view to a degree equal to or greater than does smoke described in subsection (a) of this section.~~

§ 204-29. Upset, breakdown or scheduled maintenance·

Operation of any equipment or air pollution control devices or apparatus so as to cause emissions of air contaminants in excess of limits set by this division which is a direct result of upset conditions or breakdown or is a direct result of the shutdown of such bm/4/74

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equipment of air pollution control devices or apparatus for scheduled maintenance, is not a violation of this division provided:

(a) The occurrence has been reported to the Department at least 24 hours before any scheduled maintenance, and the scheduled maintenance is performed where possible during times specified by the Department as favorable for atmospheric ventilation.

(b) The occurrence has been reported to the Department as soon as reasonably possible in the case of an upset or breakdown, but in no case more than 24 hours after occurrence.

(c) Repairs are made with maximum, reasonable effort, including use of off-shift labor, overtime, or work periods of nonoperation.

(d) The emission of air contaminants is minimized as much as possible during the scheduled maintenance, upset or breakdown.

(e) The air contaminant is not of a nature or quantity which would endanger public health or safety.

(f) Upsets or breakdowns do not occur with such frequency that careless, marginal or unsafe operation is indicated.

~~§ 204-30. Circumvention~~

~~No person shall build, erect, install or use any article, machine, equipment or other contrivance, the sole purpose of which is to dilute or conceal an emission without resulting in a reduction in the total release of air contaminants to the atmosphere. Increase in stack height or construction so as to increase stack exit velocity of gases shall not constitute a violation of this section.~~

~~§ 204-31. Duty to report discontinuance or dismantlement~~

~~It shall be the duty of any person responsible for any discontinued or dismantled fuel-burning, combustion or process equipment or device coming under the jurisdiction of the permits provision of this chapter [subchapter 206 of this title] to report to the Department within thirty (30) days the permanent discontinuance or dismantlement of such equipment or device.~~

~~§ 204-32. Variance clauses~~

~~Where emission sources in existence prior to adoption of this division do not meet the particulate matter emission limitations noted in preceding sections then a program to the particulate matter emission limitations stipulated shall be developed and offered to the Commissioner by the owner of the equipment causing~~

(9) Any person electing to apply for exceptions to the provisions of WAC 173-405-036(6) shall submit a program acceptable to the department. The program shall include the following information: The amount and concentration of suspended particulate material emitted during best practicable operating procedures, opacity recorded at such emission level, the type of equipment and procedures which will be used to demonstrate compliance and the time required for installation of the equipment.

(10) The opacity provisions of this regulation shall apply until an application is received by the department petitioning for a revised limit as allowed by WAC 173-405-036(8) above.

After a petition is received, enforcement of the opacity provisions will be stayed until the application is rejected or a new limit is established. [Order DE 76-35, § 173-405-036, filed 12/28/76. Formerly WAC 18-36-036.]

WAC 173-405-061 More restrictive emission standards. The department may establish more restrictive emission standards for new mills or for mills expanding existing facilities. Data documenting projected emissions and changes in, or affects [effects] upon, air quality, that would result from the construction or expansion, must be submitted to the department together with plans and specifications in accordance with the provisions of WAC 173-405-081. [Order DE 76-35, § 173-405-061, filed 12/28/76. Formerly WAC 18-36-061.]

WAC 173-405-071 Monitoring and reporting. (1) Every kraft mill in the state shall install equipment for the continual monitoring of TRS.

(a) The monitoring equipment shall be capable of determining compliance with these standards and shall be capable of continual sampling and recording of the concentration of TRS contaminants during a time interval not greater than thirty minutes.

(b) The sources monitored shall include, but are not limited to, the recovery furnace stacks and the lime kiln stacks.

(2) Each mill shall sample the recovery furnace, lime kiln, and smelt tank for particulate emissions on a regularly scheduled basis in accordance with its approved sampling program.

(3) Each mill shall submit within sixty days after the effective date of this regulation a detailed monitoring program and time schedule for approval by the department. The equipment shall be ordered within thirty days after the monitoring program has been approved in writing by the department. The equipment shall be placed in effective operation in accordance with the approved program within ninety days after delivery.

(4) Unless otherwise authorized by the department, data shall be reported by each kraft mill at the end of each calendar month as follows:

(a) Daily average emission of TRS gases expressed in parts per million on a dry gas basis for each source included in the approved monitoring program.

(b) The number of hours each day that the emission of TRS gases from each recovery furnace stack exceeds seventeen and one-half p.p.m. dry and the maximum concentration of TRS measured each day.

(c) Emission of TRS gases in pounds of sulfur per equivalent air-dried ton of pulp processed in the kraft cycle on a monthly basis for each source included in the approved monitoring program.

(d) Emission of particulates in pounds per equivalent air-dried ton of pulp produced in the kraft cycle based upon sampling conducted in accordance with the approved monitoring program.

(e) Average daily equivalent kraft pulp production in unbleached air-dried tons.

(f) Other emission data as specified in the approved monitoring program.

(g) For each lime kiln stack.

(i) The daily average concentration of TRS gases from each lime kiln stack.

(ii) The number of hours each day that the concentration of TRS gases exceeds 80 p.p.m. The hourly average concentration for each hour when the concentration is in excess of 80 p.p.m. and the maximum concentration of TRS measured at each stack.

(5) Each kraft mill shall furnish, upon request of the department, such other pertinent data as the department may require to evaluate the mill's emissions or emission control program.

(6) Each mill shall be required to establish a program, approved by the department, for continuous opacity monitoring to demonstrate compliance with WAC 173-405-036(6) and to report the results to the department in a format and on a schedule set by regulatory order.

If equipment for continuous monitoring of opacity is not available, continuous monitoring of operating parameters may be required as an alternate until continuous opacity monitoring equipment is available. [Order DE 76-35, § 173-405-071, filed 12/28/76. Formerly WAC 18-36-071.]

WAC 173-405-076 Report of startup, shutdown, breakdown or upset condition. If a startup, shutdown, breakdown or upset condition occurs which could reasonably be expected to result in emissions in excess of applicable limits set by this regulation, regulatory order or variance, the kraft mill shall take immediate corrective action and shall report such condition to the Department or its delegated agency promptly after the condition occurs. Each kraft mill shall, upon the request of the department or its delegated agency, submit a full written report including the known causes and the preventative measures to be taken to minimize or eliminate a recurrence. [Order DE 76-35, § 173-405-076, filed 12/28/76. Formerly WAC 18-36-076.]

WAC 173-405-081 Notice of construction. (1) Whenever the construction, installation or establishment of a kraft mill is contemplated, the owner or operator thereof shall file a notice of construction with the department.

(5) Unless otherwise authorized, data for each calendar month shall be reported for each mill as follows:

(a) For the recovery system, acid plant, and other sources:

(i) Average daily emissions of sulfur dioxide, expressed as pounds of sulfur dioxide per ton of air dried, unbleached pulp produced, and pounds of sulfur dioxide per day.

(ii) Daily average concentrations of sulfur dioxide and, for all hours greater than 800 ppm, dry, the hourly concentrations and hours. All concentrations shall be expressed in ppm, dry. For mills covered by WAC 173–410–041, hourly concentrations of SO_2 greater than 200 ppm, dry, shall be reported.

(iii) Average daily emissions of particulates in pounds per ton of air dried, unbleached pulp.

(b) For the blow system, the pounds of sulfur dioxide per minute on a 15 minute average per ton of air dried, unbleached pulp discharged from the digester.

(c) The average daily production of air dried, unbleached pulp, and the maximum daily production.

(d) Reports shall be submitted within 10 days after the end of each calendar month

(6) For mills operating under the provisions of WAC 173–410–031(6), an ambient monitoring program acceptable to the department must be established and the results submitted monthly.

(7) Each mill shall furnish, upon request of the department, such other pertinent data as the department may require to evaluate the mill's emission control program.

(8) All measurements shall be made in accordance with techniques approved by the Department.

(9) Each mill shall be required to establish a program, approved by the department, for continuous opacity monitoring to demonstrate compliance with WAC 173–410–036(6) and to report the results to the department in a format and on a schedule set by regulatory order.

If equipment for continuous monitoring of opacity is not available, continuous monitoring of operating parameters may be required as an alternate until continuous opacity monitoring equipment is available. [Order DE 76–36, § 173–410–061, filed 12/28/76. Formerly WAC 18–38–061.]

WAC 173-410-066 Report of startup, shutdown, breakdown or upset condition. If a startup, shutdown, breakdown or upset condition occurs which could reasonably be expected to result in emissions in excess of applicable limits set by this regulation, regulatory order or variance, or which could result in a violation of ambient air standards, the sulfite pulping mill shall take immediate corrective action and shall report such condition to the Department or its delegated agent promptly after the condition occurs. [Order DE 76–36, § 173–410–066, filed 12/28/76. Formerly WAC 18–38–066.]

WAC 173-410-081 Notice of construction. (1) Whenever the construction, installation or establishment of a sulfite pulping mill is contemplated, the owner or operator thereof shall file a notice of construction with the Department.

(2)(a) The addition to or enlargement or replacement of or major alteration in any sulfite pulping mill already existing at any point in time which is undertaken pursuant to an approved compliance schedule for the reduction of emissions therefrom shall be exempt from any requirement to comply with the notice of construction requirements of this section.

(b) The addition to or enlargement or replacement of or major alteration in any sulfite pulping mill already existing at any point in time which may increase the emission of any air pollutant or which may result in the emission of any air pollutant not previously emitted shall be construed as the construction, installation or establishment of a new source.

(3) Within 30 days of receipt of a notice of construction, the Department may require the submission of plans, specifications and such other information as deemed necessary for the review of the proposed project.

(4) The department shall review notices of construction and plans, specifications and other information associated therewith in order to determine the following:

(a) Whether the proposed project will be in accord with applicable rules and regulations in force pursuant to chapter 70.94 RCW, including whether the operation of the new sulfite pulping mill at the location proposed will result in any applicable ambient air quality standard being exceeded. (The applicable ambient air quality standards will be such standards as have, when the notice of construction is filed, been adopted under chapter 70.94 RCW, but it is recognized that the policy of said chapter for compliance with requirements of the Federal Clean Air Act dictates that ambient air quality standards in effect in this state cover all those contaminants for which Federal standards have been promulgated and be equal to or more stringent than such Federal standards).

(b) Whether the proposed project will provide all known available and reasonable methods of emission control. Whenever a Federal standard of performance is applicable to the source or whenever a national emission standard for hazardous air pollutants is applicable to the source, compliance with this criterion will require provision for emission control which will, at least, satisfy such standards.

(5) Within 30 days after receipt of all information required by it, the department shall:

(a) Make preliminary determinations on the matters set forth in (4) above;

(b) Make available in at least one location in the county or counties in which the proposed project is located, a copy of the preliminary determinations and copies of or a summary of the information considered in making such preliminary determinations;

(c) Require the applicant to publish notice to the public of the opportunity for written comment on the preliminary determinations within 30 days from the date such notice is made.

(6) If, after review of all information received, including public comment, with respect to any proposed project, the Department makes the determination of

~~(2) Each primary aluminum plant shall furnish, upon request of the Department, such other data as the Department may require to evaluate the plant's emissions or emission control program.~~

NEW WAC 18-52-076 REPORT OF STARTUP, SHUTDOWN, BREAKDOWN OR UPSET CONDITION. If a startup, shutdown, breakdown or upset condition occurs which could reasonably be expected to result in emissions in excess of applicable limits set by this regulation, regulatory order or variance, or which could result in a violation of ambient air standards, the aluminum reduction mill shall take immediate corrective action and shall report such condition to the Department or its delegated agency promptly after the condition occurs.

Each aluminum mill shall, upon the request of the Department, or its delegated agency submit a full written report including the known causes and the preventative measures to be taken to minimize or eliminate a reoccurrence.

~~WAC 18-52-080 SPECIAL STUDIES. (1) Special studies, covering the areas in subsections (a), (b) and (c) of this section shall be conducted at each primary aluminum plant.~~

~~(a) Emissions of particulates from all sources within the plant, including size distribution and physical and chemical characteristics where feasible, and a separation of fluoride and nonfluoride particulate.~~

~~(b) Plume opacity from all sources within the plant, including its relationship to grain loading, particulate characteristics, particle emissions in pounds per ton of production and stack characteristics.~~

~~(c) Emissions of sulfur dioxide, hydrocarbons, carbon monoxide, chlorine and chlorides, oxides of nitrogen, ozone, water vapor, and fluorides from all sources.~~

~~(2) Each primary aluminum plant shall submit a program for conducting the aforesaid special studies to the state board for approval within sixty days after the effective date of this regulation.~~

~~(3) The results of the special studies shall be submitted to the state board not later than eighteen months after approval of the special studies program.~~

AMD ~~WAC 18-52-091 NOTICE OF CONSTRUCTION. (1) Whenever the construction, installation or establishment of a primary aluminum plant is contemplated, the owner or operator thereof shall file a notice of construction with the Department.~~

~~time as shall be fixed by the Commission and after said program has been approved by the Commission, the owner or operator of the equipment causing the emission shall not be in violation of this regulation so long as the program is observed.~~

7.02. Due to unavoidable malfunctions of equipment, emissions exceeding those provided for in this regulation may be permitted by the Commission for periods not to exceed 2 days upon specific application to the Commission. Such application shall be made within 24 hours of the malfunction or within such other time period as the Commission may specify. When parts are not available for repair the Commission may grant an extension of time for a period longer than 2 days, but not to exceed 10 days.

~~Section 8. Effective Date.~~

~~Regulation III shall become effective October 1, 1966.~~

~~The foregoing is a true and correct copy of the West Virginia Air Pollution Control Commission Regulation III as adopted on the 22nd day of August, 1966.~~

Carl G. Beard II

Carl G. Beard, II
Secretary
West Virginia Air Pollution Control
Commission

~~air pollution emissions other than those noted in Sub-Section 8.01.~~

Section 9. Variance.

9.01. ~~If a plant operating under a temporary permit does not meet the requirements of this Regulation, the operator of the plant shall develop and submit to the Commission an acceptable control program to meet these requirements. This control program shall be submitted upon the request of and within such time as shall be fixed by the Commission, and after said program has been approved by the Commission, the owner or operator of the plant will not be in violation of this Regulation as long as said program is observed.~~

9.02. Due to unavoidable malfunctions of equipment or non-availability of repair parts, emissions exceeding those provided for in this Regulation may be permitted by the Commission upon specific application to the Commission. Such application shall be made within 24 hours of the malfunction or within such other time period as the Commission may specify.

~~Section 10. Effective Date.~~

~~Regulation V shall become effective September 1, 1968.~~

~~equipment such as scaffolding, railings and ladders to comply with generally accepted good safety practices.~~

~~7.02. The Director, or his duly authorized representatives, may conduct such other tests as he may deem necessary to evaluate air pollution emissions other than those noted above.~~

~~Section 8. Variances.~~

~~8.01. If it can be demonstrated to the Commission that the disposal of certain materials by any method other than burning leads to ground water contamination, then the person responsible for the disposal of such materials shall submit to the Commission within sixty (60) days a program leading to the construction of a suitable incinerator. If such program is accepted by the Commission, the person shall not be in violation as long as the program is observed.~~

8.02. Due to unavoidable malfunctions of equipment and/or non-availability of repair parts, emissions exceeding those provided for in this Regulation may be permitted by the Director. Application for such variance shall be made within 24 hours of the malfunction or within such time period as the Director may specify. These variances shall be valid for such time periods as the Director may specify.

7.02. ~~In the event that an owner or operator of such a source(s) of sulfur dioxide fails to submit a program or an acceptable program and schedule, the Commission shall, by order, determine the compliance program and schedule.~~

Section 8. Variance.

8.01. Due to unavoidable malfunction of equipment or inadvertent fuel shortages, emissions exceeding those provided for in this regulation may be permitted by the Director for periods not to exceed ten (10) days upon specific application to the Director. Such application shall be made within twenty-four (24) hours of the equipment malfunction or fuel shortage. In cases of major equipment failure or extended shortages of conforming fuels, additional time periods may be granted by the Commission provided a corrective program has been submitted by the owner or operator and approved by the Commission.

Section 9. Exemptions and Recommendations.

9.01. ~~All fuel burning units having a heat input under ten (10) million B.T.U.'s per hour will be exempt from Section 3 through Section 8. However, failure to attain acceptable air quality in parts of some urban areas may require the mandatory control of these sources at a later date.~~

9.02. ~~In an effort to avoid the necessity for such mandatory controls the Commission strongly recommends that specific fuel quality objectives [illegible] Priority I and Priority II regions and in~~

~~b. Sampling port locations.~~

~~c. Sampling point positions of each port.~~

~~5. A sketch or sketches showing the relative position and elevations of all processes or operations venting to the test stack and also the position of the sampling ports relative to the nearest upstream and downstream gas flow disturbance.~~

~~(b) Performance tests or stack tests shall follow the guiding principles described in ASME performance test code 27 with a sampling train utilizing a velocity measuring probe during sampling and an integrating gas volume meter for existing direct or portable sources, or sampling methods required or approved by the United States environmental protection agency for direct or portable sources and for hazardous pollutants. Other sampling methods may be prescribed by the department or must have prior approval of the department.~~

~~(bm) American Society of Mechanical Engineers Performance Test Code 27, copyright 1957. Copies of PTC-27-1957 are available for inspection in the offices of department of natural resources, Pyare Square Building, and secretary of state and revisor of statutes, State Capitol, Madison, Wisconsin, and may be obtained for personal use from the American Society of Mechanical Engineers, United Engineering Center, 345 East 47th Street, New York, N.Y. 10017.~~

~~(d) Test results shall be furnished to the department within 30 days unless the department provides, in writing, a 30-day extension of this deadline.~~

~~(3) The department may require provisions for instrumentation to determine the efficiency of control equipment. Such instrumentation may include devices to measure voltage, or pressure drop across the control equipment; amperage, exhaust flow rates, or scrubbing solution flow rates to, or in the control equipment; temperature in the control equipment; or other information determined to be necessary by the department.~~

~~(4) No person shall deny entry at any reasonable time to an authorized representative of the department for purposes of inspection, or at any time when an air pollution episode condition exists or is believed imminent.~~

~~(5) The department shall furnish a report of stack or performance tests or inspections it conducts to a representative of the source.~~

(6) A person shall promptly report to the department within 8 hours following the onset of any event not reported in advance to the department pursuant to subsection (7) of this section or NR 154.09 (1) (b) which causes an emission limit, including the visual emission limit, to be exceeded. A person shall also report to the department emissions in excess of the emissions provided for in a plan approved pursuant to NR 154.09 (1) (b). The person shall report the cause of the increased emission, the period of time considered necessary for correction, and measures taken to minimize emissions during the period.

(7) A person shall report to the department in advance schedules for planned shutdown and startup of air pollution control equipment and the measures taken to minimize the down time of the control equipment. Scheduled maintenance or startup of other equipment which causes an emission limit to be exceeded shall also be reported in advance to the department.

~~(8) No person shall cause, suffer, allow, or permit the installation or use of any machine, equipment or other device for dilution of emissions which would otherwise be in violation of these rules, unless written approval has been obtained from the department.~~

~~(9) Results of stack or performance tests submitted to the department shall include information from the instrumentation specified in subsection (4) taken at the time of the tests, along with copies of the original data sheets, nozzle and stack diameter, weight of material sampled and other information needed to evaluate the stack or performance tests.~~

~~History: Cr. Register, March, 1972, No. 195, eff. 4-1-72; r. and recr. (2), r. (3), renum. (4) to (6) to be (3) to (5), renum. (7) to be (6) and am., cr. (7), Register, June, 1975, No. 234, eff. 7-1-75; r. (2) (c), Register, April, 1976, No. 224, eff. 5-1-76.~~

~~**NR 154.07 County and regional programs.** Approved local programs must be compatible with these rules and the implementation plan, avoid duplication, and provide:~~

~~(1) Sufficient staff and resources to carry out the program.~~

~~(2) An air pollution control officer responsible for the program.~~

~~(3) Record keeping and reporting to the department of emission inventory, air quality monitoring, enforcement status, and other data on a standardized basis and in the form prescribed by the department.~~

~~(4) An agreement defining the responsibilities of the department and local agency to achieve an effective program.~~

~~(5) Countywide or regionwide enforcement of regulations involving:~~

~~(a) Open, backyard, and leaf burning.~~

~~(b) Ringelmann and opacity standards on stationary, semistationary, and mobile sources.~~

~~(c) Incinerators rated at or less than 50 pounds per hour of solid wastes (dry basis) or liquid wastes.~~

~~(d) Fugitive dust, odors, and other pollutants from sources other than those specified in section NR 154.04.~~

~~(e) Fugitive dust, odors, and other pollutants from sources specified in section NR 154.04, where authorized by the department.~~

~~(f) Zoning restrictions where air pollution considerations are involved.~~

~~(6) Consultation on traffic planning, approval, and implementation where air pollution considerations are involved, such as freeways, highway relocation and highway widening.~~

~~History: Cr. Register, March, 1972, No. 195, eff. 4-1-72; am. (5) (c), Register, June, 1975, No. 234, eff. 7-1-75.~~

~~**NR 154.08 Enforcement and penalties.** Whenever the department has reason to believe these rules have been violated, it may issue a written notice, which may include an order.~~

~~(1) Within 10 days after the date of notice the aggrieved person may make a written request for a hearing.~~

~~(2) Penalties: Any person who violates this chapter, or who fails, neglects, or refuses to obey any general or special order of the department, shall forfeit not less than $10 nor more than $5,000, for each violation, failure or refusal. Each day of continued violation is a separate offense. While the order is suspended, stayed, or enjoined, such penalty shall not accrue.~~

~~History: Cr. Register, March, 1972, No. 195, eff. 4-1-72.~~

~~**NR 154.09 Emissions prohibited.** (1) No person shall cause, suffer, allow, or permit emissions into the ambient air in excess of the limits set in these rules, except:~~

~~(a) When an approved program or plan with a time schedule for correction has been undertaken and correction is being pursued with diligence.~~

(b) When emissions in excess of the limits are temporary and due to scheduled maintenance, startup, or shutdown of operations carried out in accord with a plan and schedule approved by the department.

~~(c) The use of emergency or reserve equipment needed for meeting of high peak loads, testing of the equipment, or other uses approved by the department. Such equipment must be specified in writing as emergency or reserve equipment by the department. Upon startup of this equipment notification must be given to the department which may or may not give approval for continued equipment use.~~

~~History: Cr. Register, March, 1972, No. 195, eff. 4-1-72; r. and recr. (1) (b) and (c), Register, June, 1975, No. 234, eff. 7-1-75.~~

~~**NR 154.10 Limitations on open burning.** (1) Open burning is prohibited with the following exceptions:~~

~~(a) Burning of brush or weeds on agricultural lands.~~

~~(b) Fires set for practice and instruction of firemen, or testing of fire fighting equipment.~~

~~(c) Backfires to control forest fires or fires set for forest or wildlife habitat management with approval of the department where no reasonable alternative is available.~~

~~(d) Burning of explosive or dangerous material for which there is no other safe means of disposal.~~

~~(e) Burning of small amounts of dry combustible rubbish (not to include wet combustible rubbish, garbage, oily substances, asphalt,~~

Section 19. Abnormal conditions and equipment malfunction.

a. Emissions in excess of established regulation limits as a direct result of malfunction or abnormal conditions or breakdown of a process, control or related operating equipment beyond the control of the person or firm owning or operating such equipment shall not be deemed to be in violation of such regulations, if the Division is advised of the circumstances within 24 hours of such malfunction and a corrective program acceptable to the Division is furnished.

~~Section 20. Air pollution emergency episodes.~~

~~a. This regulation is designed to prevent the excessive build-up of air pollutants during air pollution episodes, thereby preventing the occurrence of an emergency due to the effects of these pollutants on the health of persons.~~

~~b. Conditions justifying the proclamation of an air pollution alert, air pollution warning or air pollution emergency shall be deemed to exist whenever the Division determines that the accumulation of air pollutants in any place is attaining or has attained levels which could, if such levels are sustained or exceeded, lead to a substantial threat to the health of persons. In making this determination, the Division will be guided by the following criteria:~~

~~(1) Air pollution forecast: An internal watch by the Division shall be activated by a National Weather Service advisory that an Atmospheric Stagnation Advisory, or the equivalent local forecast of a stagnant atmospheric condition is in effect.~~

~~(2) Air pollution alert: The alert level is that concentration of pollutants at which first stage actions begin. An alert will be declared when any one of the following levels is reached at any monitoring site:~~

~~(a) Suspended particulate - 3.0 Cohs or 375 $\mu g/m^3$, 24 hour average;~~

~~(b) SO_2 and particulate combined - product of SO_2 ppm, 24 hour average and Cohs equal to 0.2 or product of SO_2 $\mu g/m^3$, 24 hour average and particulate $\mu g/m^3$, 24 hour average equal to 65×10^3 and meteorological conditions are such the pollutant concentrations can be expected to remain at the above levels for twelve or more hours or increase unless control actions are taken.~~

~~(3) Warning: The warning level indicates that air quality is continuing to degrade and that additional control actions are necessary. A warning will be declared when any one of the following levels is reached at any monitoring site:~~

~~(a) Suspended particulate - 5.0 Cohs or 625 $\mu g/m^3$, 24 hour average;~~

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~~progress and full compliance. The Director may require persons to submit subsequent periodic reports on progress in achieving compliance. In no event shall the control plan and schedule exceed 3 years from the date of initial adoption of an applicable rule or regulation. The provisions of this Section shall not apply to sources for which permits are required under Part 1.12.~~

~~1.9.4 Nothing in this Part shall relieve any person, or any new or existing source from complying with the provisions of Chapters 1 and 2 of these rules and regulations.~~

1.10 Maintenance and Malfunctioning of Equipment; Reporting.

1.10.1 Maintenance; Reporting. In the case of shutdown of air pollution control equipment (which operates pursuant to any permit issued by the Director) for necessary scheduled maintenance, the intent to shut down such equipment shall be reported to the Director at least twenty-four (24) hours prior to the planned shutdown, unless such shutdown is accompanied by the shutdown of the source which such equipment is intended to control. Such prior notice shall include, but is not limited to the following:

(a) Identification of the specific facility to be taken out of service as well as its location and permit number.

(b) The expected length of time that the air pollution control equipment will be out of service.

(c) The nature and quantity of emissions of air contaminants likely to occur during the shutdown period.

(d) Measures such as the use of off-shift labor and equipment that will be taken to minimize the length of the shutdown period.

(e) The reasons that it would be impossible or impractical to shut down the source operation during the maintenance period.

1.10.2 Malfunction; Reporting. In the event that any emission source, air pollution control equipment, or related facility fails or breaks down in such a manner as to cause the emission of air contaminants in violation of these rules and regulations, the person responsible for such source, equipment, or facility shall notify the Director within 24 hours of such failure or breakdown and provide a statement giving all pertinent facts, including the estimated duration of the breakdown. The Director shall be notified when the condition causing the failure or breakdown has been corrected and such source, equipment, or facility is again in operation.

~~1.11 Prohibition of Air Pollution. No person shall permit or cause air pollution, as defined in Section 1.2.1 of this Chapter by the discharge of any air contaminant for which no ambient air quality standards have been set under Section 1.6.1.~~

~~1.12 Permits.~~

~~1.12.1 Permits Required.~~

~~any source or sources shall be available to public inspection and shall be correlated with applicable emission limitations.~~

~~Amended Reg. 3-73 and 9-74.~~

~~R9-3-105. Enforcement~~

~~These regulations shall be enforced according to the provisions of Arizona Revised Statutes, Title 36, Chapter 14.~~

~~Amended Reg. 3-73.~~

R9-3-106. Exceptions

A. Emissions in excess of the limits shown which are temporary and due to unavoidable breakdown of equipment or upset of operations shall not be considered a violation of these Rules and Regulations providing:

1. That the director is immediately notified of any such unusual occurrence.
2. That the director considers the suggested period of time for correction to be reasonable and necessary.
3. Breakdown or upset is determined by the director to be unavoidable and not the result of negligence.
4. That within five days after the beginning of such an occurrence, a written report shall be submitted to the director which shall include the cause and nature of the event, estimated quantity of pollutant emitted, time of emission and steps taken to control the emission and to prevent recurrence.
5. That the director is immediately notified when corrective measures have been accomplished.

B. The director may grant an exception to these regulations in instances of start-up, shutdown or scheduled maintenance provided that the source owner notifies the director ten days prior to such occurrence of the nature, duration and unavoidability of emissions and such other information as may be requested by the director.

C. In instances where start-up or shutdown of equipment is a normal operating condition, the director may grant a continuing specified period of time in which to attain compliance with these regulations.

D. This regulation shall not apply where an exception may unduly endanger human health or safety either directly or indirectly.

Amended Reg. 3-73.

~~R9-3-107. Unlawful open burning~~

~~A. Notwithstanding the provisions of any other regulation in this chapter it is unlawful for any person to ignite, cause to be ignited, permit to be ignited, or suffer, allow or maintain any open outdoor fire.~~

~~B. "Open outdoor fire", as used in this regulation, means any combustion of combustible material of any type outdoors, in the open where the products of combustion are not directed through a flue. "Flue", as used in this regulation, means any duct or passage for air, gases or the like, such as a stack or chimney.~~

~~SECTION 12. TESTING FACILITIES.~~

~~Upon request of the Director, the person responsible for a source to be tested shall provide necessary sampling ports in stacks or ducts and such other safe and proper sampling and testing facilities, exclusive of instruments and sensing devices as may be necessary for proper determination of the emission of air contaminants. Acceptable methods for both ambient and stack sampling procedures are attached to the Guidelines and may be obtained from the Director. It is recognized that other methods may be preferred and may be developed in the future; any method may be used if approval is obtained from the Commission prior to use.~~

SECTION 13. UPSET CONDITIONS; BREAKDOWN; SCHEDULED MAINTENANCE; INTERRUPTION OF FUEL SUPPLY.

(a) Emissions exceeding any of the limits established by this Code as a direct result of unavoidable upset conditions in the nature of the process, or unavoidable and unforeseeable breakdown of any air pollution control equipment or related operating equipment, or as a direct result of shutdown or startup of such equipment for necessary scheduled maintenance, shall not be deemed in violation of this Code, provided the following requirments are met:

(1) Such occurrence, in the case of unavoidable upset in or breakdown of equipment, shall have been reported to the Director within twenty-four (24) hours after the occurrence.

(2) The person responsible for such emission shall submit to the Director, at his request, a full report of such occurrence, including a statement of all known causes and of the scheduling and nature of the actions to be taken to minimize or eliminate future occurrences, including but not being limited to action to reduce the frequency of occurrence of such conditions, to minimize the amount by which said limits are exceeded and to reduce the length of time for which said limits are exceeded.

(3) In the case of shutdown for necessary scheduled maintenance, the intent to shutdown shall be reported to the Director at least twenty-four (24) hours prior to the shutdown; provided, however, that the exception provided by this Subsection shall only apply in those cases where maximum reasonable effort has been made to accomplish such maintenance during periods of non-operation of any related source operation or where it would be unreasonable or impossible to shut down the source operation during the maintenance period.

(4) The person responsible for such emission shall have submitted to the Department for its approval prior to April 30, 1972, either as a part of its permit application, if a new source, or on a separate application for existing sources, a schedule of those precautionary devices and procedures designed to minimize such occurrences as are described in the introductory paragraph to this Subsection (a); said application shall be on such forms and shall contain such information as the Department may reasonably require; said application shall have been approved by the Department and not theretofore withdrawn; and said

equipment is being operated within the terms of the application as approved, at the time of such occurrence.

(b) Any person responsible for the operation of any equipment operating in compliance with the provisions of this Code but which can reasonably anticipate periods of non-compliance due to a change of fuels, or lack thereof, shall file with the Department, for its approval prior to April 30, 1972, and on such forms and containing such information as the Department may reasonably require, an application which demonstrates to the Department's satisfaction: (1) the nature and frequency of such anticipated periods of non-compliance, (2) that such alterations in fuel supply are beyond the control of said person, firm or corporation, (3) that said person, firm or corporation has or will incorporate all reasonable steps to minimize the frequency of such periods of non-compliance and to minimize the degree of non-compliance during such periods and (4) that said person, firm or corporation has, or will, take such measures as may be necessary, to insure full or substantial compliance with all provisions of the Code during conditions of episodic air pollution. Such required measures may include but need not be limited to the maintenance of an emergency fuel supply, and/or provisions for shut-down or curtailment of production.

(c) Except for those persons who have filed for and received Department approval of applications submitted pursuant to the provisions of Subsection (a) or (b) hereof, the exceptions granted in said subsections shall not be extended and shall be considered inapplicable during the existence of conditions of air pollution, as declared by the Director pursuant to provisions of Section 2. (1), if the affected sources are located in the area in which a condition of air pollution is so declared.

(d) Nothing provided herein shall be construed to limit the Department's authority to require the installation and maintenance of control equipment as a condition of the granting of a permit or approval of an application.

~~SECTION 14. CIRCUMVENTION.~~

~~Unless prior written approval is obtained from the Commission, no person shall build, erect, install or use any article, machine, equipment or other contrivance, the sole purpose of which is to dilute or conceal an emission without resulting in a reduction of the total amount of air contaminants emitted to the atmosphere. This rule does not apply to the control of odors or to the installation of stacks for which a permit has been issued as provided in Section 3.~~

~~SECTION 15. TIME SCHEDULE FOR COMPLIANCE.~~

~~Unless otherwise specified herein, the dates for compliance as set forth in Section 15 of the Arkansas Air Pollution Control Code, as promulgated July 25, 1969 shall remain in full effect. Said Section reads as follows:~~

~~"Except as otherwise specified, compliance with the provisions of this Code shall be according to the following time schedule:~~

~~(a) All new installations shall comply as of going into operation.~~

~~(b) All existing installations not in compliance as of the effective date of this Code shall be in compliance within six (6) months of the effective date unless the owner or person responsible for the operation of the installation~~

COLORADO

II. GENERAL:

~~A. TO CONTROL EMISSIONS LEAVING COLORADO:~~

~~"When emissions generated from sources in Colorado cross the state boundary line, such emissions shall not cause the air quality standards of the receiving state to be exceeded provided reciprocal action is taken by the receiving state." (66-31-21(3)).~~

~~B. EMISSION MONITORING REQUIREMENTS:~~

~~The Division may require owners or operators of stationary air contamination sources to install, maintain, and use instrumentation to monitor and record emission data as a basis for periodic reports to the Division. (66-31-6, 66-31-10(2)(c) and (d)).~~

~~C. PERFORMANCE TESTING:~~

~~In order to determine compliance with emission control regulations, the Division may require the owner or operator of any source to conduct performance tests in accordance with methods approved by the Division with the tests being made at the expense of the owner or operator. The Division may monitor such required performance tests conducted by the owner or operator and may also conduct performance tests. (66-31-6, 66-31-10(2)(c) and (d)).~~

D. UPSET CONDITIONS AND BREAKDOWNS:

Upset conditions, as defined, shall not be deemed to be in violation of these Regulations provided that the Air Pollution Control Division is notified as soon as possible, but no later than 2 hours after the start of the next working day, followed by written notice to the Division explaining the cause of the occurrence and that proper action has been or is being taken to correct the conditions causing said violation and to prevent such excess emissions in the future. (66-31-8(4)).

~~E. EFFECTIVE DATE:~~

~~The effective date of this "common provisions regulation" is February 1, 1972.~~

~~F. REVOCATION OF TEMPORARY EMISSION CONTROL REGULATIONS:~~

~~The temporary emission control regulations, identical to provisions set forth in sections 66-29-5(2) through (8), Colorado revised statutes 1963, as amended, are revoked. (66-31-24(1)).~~

~~(d) (4) During any period of Air Pollution Advisory, Alert, Warning, or Extreme Emergency, standby plans shall be made available on the premises to persons authorized to enforce these regulations.~~

~~(d) (5) The standby plans required by subsection (d) (1) shall be submitted to the Commissioner by August 1, 1972. Standby plans requested by the Commissioner under subsection (d) (2) shall be submitted within 90 days of the date of receipt of the request. When in the judgment of the Commissioner a standby plan is not adequate to carry out the objectives set forth in Tables I – III, he may reject the plan and require that it be resubmitted in an acceptable form within 30 days from the date of rejection.~~

~~(e) **Declaration of air pollution emergency in aid of sister state.** Notwithstanding that the concentration of pollutants in the air over the State of Connecticut does not meet the criteria set forth in subsections (b) (1) to (b) (4) for any stage of an air pollution emergency, the Commissioner may nevertheless declare such emergency to be in effect at the stage level he deems appropriate when it becomes necessary to reduce the level of air pollutants in Connecticut to avoid intensifying deteriorated air conditions in one or more areas outside the state that are endangering the health and welfare of residents in those areas.~~

~~(f) **Emissions from a limited number of sources.** Whenever the Commissioner determines that a specified emergency criteria level has been reached in a limited area, he may restrict the response to such emergency in the manner he deems appropriate, including notification to those sources contributing or believed to be contributing to the emergency levels that the abatement actions of Tables I, II, or III, as the case may be, are required and shall be put into effect until the pollutant levels are reduced below the criteria levels.~~

(Effective June 1, 1972)

Sec. 19-508-7. Malfunction of control equipment; reporting

(a) Equipment or methods which control air pollutant emissions from a source and which are necessary to the operation of such source in compliance with applicable emission standards and regulations shall be maintained in operation at all times that the source is in operation or is emitting air pollutants.

(b) No person shall deliberately shut down any such control equipment or method while the source is in operation except for such necessary maintenance as cannot be accomplished when the source itself is not in operation and is not emitting air pollutants.

(c) In the case of breakdown, failure, or deliberate shutdown of any control equipment or method during which time the source will be in operation, all reasonable measures shall be taken to assure resumption of control as soon as possible. Due diligence shall be exercised to minimize emissions while the control equipment or method is inoperative. In the event such shutdown of control equipment or methods is expected or may reasonably be expected to continue for longer than 72 hours, and if the source is to be operated at any time during that period, the Commissioner shall be notified promptly. Such notice shall include, but is not limited to, the following:

(1) Identification of the specific facility taken out, or to be taken out, of service as well as its location and, where applicable, registration or permit number;

(2) The expected length of time that the air pollution control equipment will be out of service;

(3) The nature and quantity of emissions of air pollutants likely to be emitted during the shutdown period;

(4) Measures such as the use of off-shift labor and equipment that will be taken to minimize the length of the shutdown period;

(5) The reasons that it would be impossible or impractical to shut down the source operation during the maintenance period.

(d) The Commissioner may attach conditions to the operation of the source during the period of shutdown or breakdown.

(Effective June 1, 1972)

~~**Sec. 19-508-6. Compliance schedule**~~

~~(a) All new sources must comply with all regulations as of startup of operations.~~

~~(b) (1) Existing sources must comply with sections 19-508-17 (b), 19-508-18 (b), 19-508-18 (d), and 19-508-23 (a) by June 1, 1972.~~

~~(b) (2) Existing sources must comply with sections 19-508-18 (a), 19-508-18 (c), 19-508-18 (e), 19-508-18 (f), 19-508-19 (b) through (f) inclusive, 19-508-20 (a) through (e) inclusive, sections 19-508-20 (f) (1), 19-508-20 (f) (2), 19-508-20 (f) (3), 19-508-20 (f) (5), 19-508-20 (f) (6), 19-508-20 (f) (7), 19-508-20 (f) (8), 19-508-20 (f) (9), 19-508-20 (f) (10), 10-508-21 (a) and (b), and 19-508-22 (a) through (c) inclusive as expeditiously as practicable but not later than June 1, 1973.~~

~~(b) (3) Sources subject to section 19-508-20 (f) (4) must submit to the Commissioner a proposed compliance plan and schedule by November 1, 1972, which plan must provide for compliance with appropriate regulations as expeditiously as practicable but not later than April 1, 1975. Sources that do not submit such a plan must be in compliance by June 1, 1973.~~

~~(b) (4) Fuel merchants must comply with section 13-508-19 (a) (2) by September 1, 1972, and fuel users must comply with that section by April 1, 1973.~~

~~(c) Engine Idling. No person, nor his servants or agents, shall cause, suffer, permit or allow the engine of a gasoline, or diesel powered motor vehicle including private passenger vehicles, on public or private space to idle for more than 3 minutes while such motor vehicle is parked, stopped or standing, except as follows:~~

~~(1) To permit the operation of power takeoff equipment such as but not limited to dumping, cement mixers, refrigeration systems, content delivery, winches, or shredders.~~

~~(2) To permit the operation for 15 minutes of air conditioning equipment on buses with an occupancy of 12 or more persons.~~

~~(3) To permit the operation of heating equipment when the local temperature is 32° Fahrenheit or below.~~

~~(d) Lead Content Reduction. After July 4, 1974, all gasoline service stations shall offer for sale at least one grade of regular gasoline which contains no more than .05 gram of lead per gallon. After January 1, 1974 no gasoline containing more than 2.0 grams of lead per gallon shall be sold. After January 1, 1976 no gasoline containing more than 1.0 grams of lead per gallon shall be sold.~~

~~Section 8-2:715. ODOROUS OR OTHER AIR POLLUTANTS.~~

~~(a) Injurious Pollutants. No person shall cause, suffer, or allow an emission into the atmosphere of odorous or other air pollutants from any source in such quantities and of such characteristics and duration as is, or is likely to be injurious to the public health or welfare, or which interferes with the reasonable enjoyment of life and property.~~

~~(b) Odor Violations. The emission of an odor shall be deemed a violation when after separate complaint of 3 or more persons:~~

~~(1) The Commissioner using the Barnebey-Cheney Scentometer at Number 1 odor strength detects an odor; or~~

~~(2) The Commissioner using any other device approved by him as an effective instrument in the detection of odors, record an odor.~~

~~Section 8-2:716. CONTROL DEVICES AND PRACTICES.~~

~~(a) Motor Vehicles. No person shall remove or cause, or permit to become inoperative or ineffective devices installed by motor vehicle manufacturers for the purpose of controlling emissions or otherwise complying with law.~~

(b) Stationary Sources. No person shall remove, or cause, or permit to become inoperative or ineffective devices or practices provided for the control of air pollutants discharged from stationary sources, or otherwise complying with law.

(1) Shutdown of Stationary Source Control Equipment. Whenever it is necessary to shut down air pollution control equipment for periodic maintenance, the owner or operator of such equipment shall report the planned shutdown to the Commissioner at least 48 hours prior thereto. Such prior notice shall include, but is not limited to, the following:

A. Identification of the specific facility to be taken out of service as well as its location and permit number;

B. The expected length of time that the air pollution control equipment will be out of service;

C. The nature and quantity of emissions of air pollutants likely to occur during the shutdown period;

D. Measures that will be taken to minimize the length of shutdown period; and

E. The reasons that it would be impossible or impractical to shut down the source operation during the maintenance period.

(2) Notification by Commissioner. The Commissioner shall by notice to the owner or operator permit the continued operation of the stationary source for the time period proposed, or for such lesser time as he deems reasonable, or he may order the owner or operator to discontinue operation of the stationary source until the maintenance is completed, or the malfunctioning equipment is repaired.

~~Section 8-2:717. RECORDS, REPORTS, AND MONITORING DEVICES.~~

~~(a) Reporting of Information Upon Request of Commissioner. The Commissioner may require any person engaged in operations which may result in air pollution or the handling of products the use of which may result in air pollution to file with the Commissioner written reports containing information as to:~~

~~(1) Location and description of source;~~

~~(2) The chemical composition, physical properties, and the amount of any material used; and~~

~~(3) Such other information as the Commissioner shall require for the enforcement of this regulation.~~

~~(b) Required Records and Periodic Reports. The owner or operator of a stationary source which emits 25 tons or more per year of any air pollutants shall maintain written records of the nature and amount of emissions of such source. Such records shall include, (1) emission data derived from stationary source monitoring and measuring devices required by subsection (c) of this section, and (2) the results of sampling of emissions, showing sampling methods and procedures used. Such records shall be made available~~

~~party so requests the committee shall be appointed~~

~~(4) Any citizen or affected party may, in accordance with the Florida Administrative Procedures Act, Chapter 120, Florida Statutes, request a determination of Latest Reasonably Available Control Technology for a source or category of sources.~~

~~(5) The determination of Latest Reasonably Available Control Technology shall be made by the Board only after notice and public hearing is requested by an affected party.~~

~~(6) Determinations of Latest Reasonably Available Control Technology shall be periodically reviewd by the Department, and shall be subject to revision in accordance with this Section 17-2.03 (1), Florida Administrative Code, subsequent to such review if the Board determines, on the basis of competent substantial evidence, that different equipment, devices or processes will result in a reduction of emissions.~~

~~(B) Application~~

~~(1) If the application of the Latest Reasonably Available Control Technology to an air pollutant source will result in lower or improved air pollutant emissions, then the Department shall require that the Latest Reasonably Available Control Technology be applied~~

~~(2) Exceptions.~~

~~The Latest Reasonably Available Control Technology shall not be required:~~

~~a. If there is an emission limiting standard for the source and it is being complied with; and~~

~~b. If the source complies with all requirements of any duly promulgated air quality maintenance or improvement plan adopted by the Department; and~~

~~c. If the source complies with the Department Rule Section 17-2.03 (4) (b), Florida Administrative Code; and~~

~~d. If the Department does not find that public interest factors other than those in a., b., and c. above require the use of Latest Reasonably Available Control Technology. In making such a finding the Department shall;~~

~~1. Give due consideration to all the following:~~

~~(a) The necessity of imposing the level of emission limitation which would be achieved by the application of such technology in order to attain and maintain Ambient Air Quality Standards specified in Section 17-2.05, and prevent degradation of air quality in accordance with these rules; and~~

~~(b) The social and economic impact of the application of such technology, including consideration of any useful life of presently installed, permitted control equipment and the amortization of the value of such equipment balanced with the cost and advantages of the new technology; and~~

~~(c) The energy consumption or conservation associated with such technology; and~~

~~(d) Alternative means of providing attainment and maintenance of the Ambient Air Quality Standards specified in Section 17-2.05, and the prevention of degradation of air quality in accordance with these rules; and~~

~~(e) Secondary pollution problems created by the application of any particular technology.~~

~~2. Provide the owner or operator of the source adequate notice and an opportunity for public hearing.~~

~~3. Set forth its specific findings on applicable issues and ultimate determination and the rationale therefore, if requested by a party prior to the hearing.~~

~~(3) For those sources for which there is no emission limiting standard, the application of Latest Reasonably Available Control Technology shall be required unless:~~

~~(I) The owner of the source affirmatively shows that~~

~~(1) The source complies with all requirements of any duly promulgated air quality maintenance or improvement plan adopted by the Department; and~~

~~(2) The source complies with the Department Rule Secion 17-2.03 (4) (b), Florida Administrative Code; and~~

~~(II) The owner of the source affirmatively shows and the Department finds after considering all the matters set forth in (B) (2) d. 1. that the application of LRACT is not necessary to the public interest.~~

~~(2) Existing Source Compliance — Except where compliance dates are specified, existing sources shall comply with this chapter as expeditiously as possible but in no case later than July 1, 1975.~~

~~(3) Operation Rates — No plant or source shall operate at capacities which exceed the limits of operation of a control device or exceed the capability of the plant or control device to maintain the air emission within the standard limitation imposed by this chapter, or by permit conditions.~~

~~(4)(a) Air Quality Standards Violated — No person shall build, erect, construct, or implant any new source or operate, modify or rebuild an existing source or by any other means release or take action which would result in release of air pollutants into the atmosphere of any region, which will, as determined by the Board, result in, including concentrations of existing air pollutants, ambient air concentrations greater than ambient air quality standards.~~

~~(b) Significant Degradation~~

~~(i) "In those counties of the state which have a baseline air quality better than that defined by the Ambient Air Quality Standards, Section 17-2.05, no person shall emit into the atmosphere any air pollutant which significantly degrades that quality and in such counties no person shall construct a new source or expand an existing source, groups of sources, or a complex source which by itself, or in association with mobile sources, significantly degrades the baseline air quality."~~

~~(ii) Whether a new source or proposed expansion of an existing source will significantly degrade the baseline air quality shall be determined by the Board only after;~~

~~a) Notice and hearing,~~

~~b) Considering all relevant matters, and~~

~~c) The source owner has affirmatively demonstrated that the degradation is not contrary to the public interest.~~

~~(iii) Increases of air pollution levels or Baseline Air Quality may be determined by use of scientifically valid predictive air quality dispersion models.~~

~~(iv) No increase in pollutant concentrations above the baseline air quality will be allowed unless the latest reasonably available control technology is utilized to control emissions from the source.~~

~~(v) The phrase "Baseline Air Quality" means the maximum concentration of pollutants in the ambient air representative of one of the following calendar years measured or estimated in the area in which the proposed new source or expanded source would have a significant effect:~~

~~a) Calendar year 1973 for all sources except fossil fuel steam generators,~~

~~b) Calendar year 1972 for all fossil fuel steam generators, except such steam generators which were burning natural gas during this period of time, or~~

~~c) For those fossil fuel steam generators which were burning natural gas during 1972, the baseline will be calculated as if said generators were burning the BTU equivalent of 2.5% sulfur content oil.~~

~~In the absence of air quality data, any approved air quality dispersion model may be used to predict the Baseline Air Quality.~~

~~(vi) This Subsection 17-2.03 (4) (b), F.A.C., shall be effective until December 31, 1977, or until such time that a superceding rule is duly adopted; provided however, that in the event a superceding rule is not adopted before December 31, 1977, this subsection shall cease to be operative, and the Subsection 17-2.03 (4) (b), which was adopted by the Florida Pollution Control Board on January 11, 1972 and which became effective on January 18, 1972, shall become effective and operative at the end of the one year period.~~

~~(5) Concealment — No person shall build, erect, install or use any article, machine, equipment or other contrivance, the use of which will conceal an emission which would otherwise constitute a violation of any of the provisions of this chapter.~~

~~(6) Circumvention — No person shall circumvent any air pollution control device, or allow the emission of air pollutants without the applicable air pollution control device operation properly.~~

~~(7) Maintenance — All air pollution control devices and systems shall be properly and consistantly maintained in order to maintain emissions in compliance with Department Rules.~~

(8) Excess emissions during startup, shutdown, and malfunctions.

(a) Excess emissions resulting from startup, shutdown or malfunction of any source shall be permitted providing (1) best operational practices to minimize emissions are adhered to and (2) the duration of excess emissions shall be minimized but in no case exceed two hours in any 24 hour period unless specifically authorized by the Department for a longer duration.

(b) Excess emissions which are caused entirely or in part by poor maintenance, poor operation, or any other equipment or process failure which may reasonably be prevented during startup, shutdown or malfunction shall be prohibited.

(c) Considering operational variations in types of industrial equipment operations affected by this rule, the Department may adjust maximum and minimum factors to provide reasonable and practical regulatory controls consistent with the public interest.

(d) In case of excess emissions resulting from malfunctions, each source shall notify the Department or the appropriate Local Program in accordance with Section 17-4.13 F.A.C. A full written report on the malfunction shall be submitted in a quarterly report, if requested by the Department.
Specific Authority 403.061 FS. Law Implemented 403.021, 403.031, 403.061 FS. History Revised 1-18-72, Amended 12-28-74, 6-10-76, 7-20-76.

~~17-2.04 Prohibitive Acts~~

~~(1) Visible Emissions — No person shall cause, let, permit, suffer or allow to be discharged into the atmosphere any air pollutants from:~~

~~(a) Existing Sources, until July 1, 1975, the density of which is equal to or greater than that designated as Number 2 on the Ringelmann Chart or the opacity of which is equal to or greater than 40 percent.~~

~~(b) New Sources, and after July 1, 1975, existing sources, the density of which is equal to or greater than that designated as Number 1 on the Ringelmann Chart or the opacity of which is equal to or greater than 20 percent.~~

~~(c) This subsection 17-2.04(1) does not apply to emissions emitted in accordance with specified emission limiting standards or in accordance with the process weight table (Table 1) provided in this chapter.~~

~~(d) If the presence of uncombined water is the only reason for failure to meet visible emission standards given in this section such failure shall not be a violation of this rule.~~

~~(2) Particulate Matter — No person shall cause, let, permit, suffer, or allow the emission of particulate matter from any air pollutant source in total quantities in excess of the amount shown in Table I, except as otherwise provided for in this chapter for specific emission limiting standards of particulate matter from specified sources.~~

~~failure to provide necessary equipment or facilities or to take necessary precautions, cause, permit, or allow the emission from said air contamination source or sources of such quantities of air contaminants as will cause, or tend to cause, by themselves or in conjunction with other air contaminants, a condition of air pollution. Complying with any of the other sections of these rules and regulations shall in no way exempt a person from this provision.~~

~~2. In cases where more than one section of these regulations applies, the section allowing the least emission of air contaminants to the atmosphere shall prevail.~~

~~3. Notwithstanding any other emission limitation or other requirement provided in the regulations, more stringent emission limitations or other requirements may be required of a facility as deemed necessary by the Director to~~

~~(i) meet any existing Federal laws or regulations, or~~

~~(ii) safeguard the public health, safety and welfare of the people of the State of Georgia.~~

~~(b) Smoke:~~

~~1. Except as may be provided in other more restrictive or specific sub-sections of this rule no person shall cause, suffer, allow or permit the emission from any air contaminant source of smoke the opacity of which is~~

~~(i) equal to or greater than No. 2 of the Ringelmann Smoke Chart, or equivalent opacity or,~~

~~(ii) Equal to or greater than No. 3 of the Ringelmann Smoke Chart, or equivalent opacity, for a period or aggregate period of time greater than three minutes in any one-half hour.~~

2. The Director may grant to any person having control of a source of air contaminants permission to emit smoke in excess of limits prescribed in these rules during emergency periods caused by breakdowns or upset conditions.

~~3. In general, Ringelmann Smoke Chart or equivalent opacity readings shall not apply to emissions whose opacity is essentially due to uncombined water.~~

~~(3) Registration Forms~~

~~Registration shall be made on forms provided for this purpose by the Director and shall include such information as may be necessary to enable the Director to evaluate the nature and extent of emissions.~~

~~(4) Registration Fees~~

~~A fee of $10.00 shall be assessed for each stack, chimney, or stationary container.~~

~~(5) Violators Not Exempt.~~

~~Registration shall not exempt any person owning or operating a source from prosecution for violation of applicable rules and regulations.~~

~~Section 3. Sampling and Testing Methods:~~

~~(a) All sampling and testing shall be made and the results calculated in accordance with test procedures approved by the Department. All tests shall be made under the direction of persons knowledgeable in the field of air pollution control.~~

~~(b) The Department may conduct tests of emissions of air pollutants from any source. Upon request of the Department, the person responsible for the source to be tested shall provide necessary ports in stacks or ducts and such other safe and proper sampling and testing facilities, exclusive of instruments and sensing devices, as may be necessary for proper determination of the emissions of air pollutants.~~

Section 4. Malfunction of Equipment Reporting:

(a) In the case of shutdown of air pollution control equipment for necessary scheduled maintenance, the intent to shut down such equipment shall be reported to the Department at least twenty-four (24) hours prior to the planned shutdown. Such prior notice shall include, but is not limited to, the following:

(1) Identification of the specific facility to be taken out of service as well as its location and permit number.

(2) The expected length of time that the air pollution control equipment will be out of service.

(3) The nature and quantity of emissions of air pollutants likely to be emitted during the shutdown period.

(4) Measures such as the use of off-shift labor and equipment that will be taken to minimize the length of the shutdown period.

(5) The reasons that it would be impossible or impractical to shut down the source operation during the maintenance period.

(b) In the event that any emission source, air pollution control equipment, or facility breaks down in such a manner as to cause the emission ir pollutants in violation of applicable rules and regulations, the erson responsible for such equipment shall immediately notify the Department of such failure or breakdown and provide a statement giving all pertinent facts, including the estimated duration of the breakdown. The Department shall be notified when the condition causing the failure or breakdown has been corrected and the equipment is again in operation.

~~Section 5. Prohibition of Air Pollution:~~

~~No person shall permit or cause air pollution as defined in Section 1(b) of this part.~~

~~Section 6. Compliance Schedule:~~

~~All existing sources not in compliance with applicable rules and regulations on the date of adoption of such rules and regulations shall be in compliance on the date specified in these regulations unless the owner or person responsible for the operation of the source shall have submitted to and have approved by the Department a control plan and schedule for achieving compliance. Such plan and schedule must specify the date on or before which compliance will be attained, and such other information as the Department may require. If approved by the Department, such date will be the date on which the person shall comply. The Department may require persons submitting such a plan to submit subsequent periodic reports on progress in achieving compliance.~~

~~Section 7. Control of Open Burning:~~

~~(a) Except as provided in Section 7 (b) and (c) of this regulation, upon adoption of these regulations, no person shall ignite, cause to be ignited, permit to be ignited, or maintain any open fire.~~

~~(b) Section 7 (a) shall not apply to:~~

~~(1) Open fires for the cooking of food.~~

~~(2) Fires for recreational, decorative, or ceremonial purposes.~~

~~(3) Fires to abate a fire hazard, providing hazard is so declared by the fire department or District Forester having jurisdiction.~~

~~(4) Fires for prevention or control of disease or pests.~~

~~(5) Fires for training personnel in the methods of fighting fires in compliance with Section 8(a).~~

~~(6) Fires for the disposal of dangerous materials, where there is no alternate method of disposal and burning is approved in advance by the Department.~~

~~(7) Fires for the burning of leaves, grass, weeds, wood, paper and similar materials on ones own premises, not exceeding four family units and 25 pounds per day, per unit, provided such burning is not within 50 feet of any habitable building, is attended or supervised by an adult person and is completed within daylight hours (9 a.m. to 6 p.m.) and provided further that such burning shall not be in violation of the regulations~~

~~person shall cause or permit agricultural fires without applying for and obtaining a permit from the department. Application shall be made on forms specified by the Department. Burning shall be carried out according to all provisions made by the Department in granting a permit.~~

~~(2) Burn or no-burn days: Agricultural burning shall be prohibited in specified zones and at specified times when ambient air quality standards could be exceeded in that zone and for general meteorological forecast for affected zones are unsuitable on the basis of meteorological criteria for regulating agricultural burning. Notices of no-burn days for the specified zone(s) will be provided at 4:00 p.m., applicable for the succeeding day.~~

Section 8. Visible Emissions:

~~(a) Visible emission restrictions for existing stationary sources.~~

~~(1) No person shall cause or permit the emission of visible air pollutants of a shade or density equal to or darker than that designated as No. 2 on the Ringelmann Chart or 40 percent opacity, except as provided in Section 8(a) (2).~~

(2) A person may discharge into the atmosphere from any single source of emission, for a period or periods aggregating not more than 3 minutes in any 60 minutes, air pollutants of a shade or density not darker than No. 3 on the Ringelmann Chart or 60 percent opacity when building a new fire or when breakdown of equipment occurs. ✓

~~(3) Sources in the City and County of Honolulu and County of Maui shall meet the requirements of Section 8(a)(1) immediately upon adoption of the regulations or in accordance with the schedule(s) established under the provisions of Section 6, Compliance Schedule. Sources on all other counties shall meet the requirements of Section 8(a)(1) on June 1, 1973.~~

(b) Visible emission restrictions for new stationary sources.

~~(1) No person shall cause or permit the emission of visible air pollutants of a shade or density equal to or darker than that designated as No. 1 on the Ringelmann Chart or20 percent opacity, except as provided in Section 8(b)(2).~~

~~(2) A person may discharge into the atmosphere from any single source of emission, for a period or periods aggregating not more than 3 minutes in any 60 minutes, air pollutants of a shade or density not darker than No. 3 on the Ringelmann Chart or 60 percent opacity when building a new fire or when breakdown of equipment occurs.~~

~~(3) The effective date shall be immediately upon adoption of the regulations.~~

~~(c) Exceptions for uncombined water. The provisions of this regulation shall not apply to any emission which, except for the presence of uncombined water, such as condensed water vapor, would not be in violation of such provisions.~~

Section 9. Control of Motor Vehicles:

B. ~~The administrator, after hearing, may require such compliance schedules, periodic reports, records and monitoring, or emergency episode plans for an individual pollution source or for an entire group or class of such pollution sources.~~

C. ~~All reports and information submitted to the Department shall be provided in a format approved by the Department.~~

D. ~~Any records or information furnished to the Department shall be subject to the confidentiality provisions of Section 114 of the 1970 Federal Clean Air Act.~~

SECTION 6

UPSET CONDITIONS, BREAKDOWN

Emissions exceeding any of the limits established in these regulations as a direct result of upset conditions in, or breakdown of, any air pollution control equipment, or related operating equipment, or as a direct result of the shutdown of such equipment for scheduled maintenance, shall not be deemed to be in violation of the rules establishing such limits, providing all the requirements of this section are met.

A. Such occurrence shall be reported in writing to the Department of Environmental Protection and Health as soon as reasonably possible; for scheduled maintenance, such reports shall be submitted at least twenty-four hours prior to shutdown, and for upset conditions or breakdown such reports shall be made no later than the end of the working day following the occurrence.

B. This exception shall not apply to scheduled maintenance on pollution control equipment, except in those cases where the maximum reasonable effort, including off-shift labor where required, has been made to accomplish such maintenance during periods of non-operation of any related source operations or equipment.

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The person responsible for such emissions shall, with all practicable speed, initiate and complete appropriate reasonable action to correct the conditions causing such emissions to exceed said limits; to reduce the frequency of occurrence of such conditions; to minimize the amount by which said limits are exceeded; and shall, upon request of the Department of Environmental Protection and Health, submit a full report of such occurrence, including a statement of all known causes, and of the scheduling and nature of the actions to be taken.

Persons responsible for operating equipment that might exhaust harmful contaminants during maintenance shutdowns, shall provide auxiliary pollution abatement equipment to maintain levels below those harmful to man, animals, and vegetation, or reduce production levels to meet such requirements.

SECTION 7

~~VARIANCES~~

~~A. Petition. A variance proceeding shall be commenced by filing three copies of a petition for variance with the Administrator. The complaint may be accompanied by such affidavits or other proof as the petitioner may submit in order to make it possible for the Administrator, if he so desires, to dispose of the matter without a hearing. The petition shall contain the following:~~

~~(c) **Standards for Approval.** No Compliance Program and Project Completion Schedule shall be approved unless the applicant submits proof to the Agency that:~~

~~(1) the Compliance Program will result in timely compliance with applicable standards and limitations of Part 2 of this Chapter; and~~

~~(2) the owner or operator has provided adequate proof that it is committed to the Compliance Program and Project Completion Schedule, including, in the case of a corporation, certification by a duly authorized officer of such corporation that such corporation approves each and every provision of such program and of such schedule.~~

~~(d) **Revisions.** The owner or operator of an emission source or air pollution control equipment subject to an approved Compliance Program and Project Completion Schedule may request a revision of such Program or Schedule at any time. In addition, the Agency may require a revision upon any change in the Act or this Chapter. The Agency shall not approve any revision which contains a final compliance date later than the applicable date prescribed in Part 2 of this Chapter.~~

~~(e) **Effects of Approval.** The approval of a Compliance Program and Project Completion Schedule shall be a condition precedent to the issuance and effectiveness of a Permit pursuant to Rule 103. An approved Compliance Program and Project Completion Schedule, and full compliance therewith, and a current Operating Permit, shall be a prima facie defense to any enforcement action alleging a violation of the standards or limitations set forth in Part 2 of this Chapter with respect to any air contaminant included in such Program and Schedule during the period of the program. Failure to adhere to an approved compliance schedule shall constitute a violation of this Part for which appropriate sanctions may be sought in accordance with the Act.~~

~~(f) **Records and Reports.** Any person subject to this Rule shall maintain such records and make such reports as may be required in procedures adopted by the Agency pursuant to Rule 107.~~

05: **Malfunctions, Breakdowns or Startups.**

(a) **Prohibition.** No person shall cause or allow the continued operation of an emission source during malfunction or breakdown of the emission source or related air pollution control equipment if such operation would cause a violation of the standards or limitations set forth in Part 2 of this Chapter, unless the current Operating Permit granted by the Agency provides for operation during a malfunction or breakdown. No person shall cause or allow violation of the standards or limitations set forth in Part 2 of this Chapter during startup unless the current Operating Permit granted by the Agency provides for violation of such standards or limitations during startup.

(b) **Contents of Request for Permission to Operate During a Malfunction, Breakdown or Startup.**

(1) A request for permission to continue to operate during a malfunction or breakdown, if desired, shall be included as an integral part of the application for an Operating Permit pursuant to Rule 103, and shall include as a minimum: a full and detailed explanation of why such continued operation is necessary; the anticipated nature, sources and quantities of emissions which will occur during such continued operation; the anticipated length of time during which such operation will continue; all measures, such as use of off-shift labor or equipment which will be taken to minimize the quantity of air contaminant emissions and length of time during which such operation will continue. When the standards or limitations of Part 2 of this Chapter will be violated during startup, a request for permission to violate such standards or limitations shall be an integral part of the application for an Operating Permit pursuant to Rule 103, and shall include, as a minimum: a description of the startup procedure for each emission source, the duration and frequencies of such startups, the types and quantities of emissions during such startups, and the applicant's efforts to minimize any such startup emissions, duration of individual startups, and frequency of startups.

(2) The Agency may adopt procedures which require data and information in addition to or in amplification of the matters set forth in paragraph (b)(1) of this Rule 105, and which set forth the format in which all data and information shall be submitted. Such procedures and formats, and revisions

thereto, shall not become effective until filed with the Index Division of the Office of the Secretary of State as required by "An Act concerning administrative rules," approved June 14, 1951, as amended.

(c) **Standards for Granting Permission to Operate During a Malfunction, Breakdown or Startup.** Permission shal not be granted to allow continued operation during a malfunction or breakdown unless the applicant submits proof to the Agency that: such continued operation is necessary to prevent injury to persons or severe damage to equipment; or that such continued operation is required to provide essential services; provided, however, that continued operation solely for the economic benefit of the owner or operator shall not be a sufficient reason for granting of permission. Permission shall not be granted to allow violation of the standards or limitations of Part 2 of this Chapter during startup unless the applicant has affirmatively demonstrated that all reasonable efforts have been made to minimize startup emissions, duration of individual startups, and frequency of startups.

(d) **Records and Reports.** Any person who causes or allows the continued operation of an emission source during a malfunction or breakdown of the emission source or related air pollution control equipment when such continued operation would cause a violation of the standards or limitations set forth in Part 2 of this Chapter shall immediately report such incident to the Agency by telephone, telegraph, or such other method as constitutes the fastest available alternative, except if otherwise provided in the Operating Permit. Thereafter any such person shall comply with all reasonable directives of the Agency with respect to the incident. In addition, any person subject to this Rule shall maintain such records and make such reports as may be required in procedures adopted by the Agency pursuant to Rule 107.

(e) **Continued Operation or Startup Prior to Granting of Operating Permit.** Any person desiring to continue to operate, or to startup in accordance with paragraph (a) of this Rule prior to the date when an Operatin Permit is required pursuant to Rule 103 shall make immediate application for Permission to Operate during Malfunction, Breakdown or Startup in accordance with paragraph (b) of this Rule 105.

(f) **Effect of Granting of Permission to Operate During a Malfunction, Breakdown or Startup.** The granting o permission to operate during a malfunction or breakdown, or to violate the standards or limitations of Part of this Chapter during startup, and full compliance with any terms and conditions connected therewith, shal be a prima facie defense to an enforcement action alleging a violation of paragraph (a) of this Rule 105, o the emission and air quality standards of this Chapter, and of the prohibition of air pollution during the tim of such malfunction, breakdown, or startup.

Rule 106: Monitoring and Testing.

(a) **Monitoring Equipment.**

~~(1) Every emission source or air pollution control equipment shall be equipped with such monitorin instruments as may be required in procedures adopted by the Agency or as a condition to a permi issued by the Agency. Such procedures and formats, and revisions thereto, shall not become effectiv until filed with the Index Division of the Office of the Secretary of State as required by "An Ac concerning administrative rules," approved June 14, 1951, as amended. The Agency may require that such monitoring instruments be continuous or intermittent. Such monitoring instruments shall be installed, maintained and operated at the expense of the owner or operator of the emission source or air pollution control equipment.~~

~~(2) Before adopting or making substantive changes to any such procedures adopted by the Agency, the Agency shall:~~

~~(A) publish a summary of the proposed changes in the Board Newsletter or a comparable publicatio at the Agency's expense; and~~

~~(B) provide a copy of the full text of the proposed changes to any person who in writing so reques and~~

~~(C) defer adoption of the changes for 45 days from the date of publication to allow submission consideration of written comments on the proposed changes.~~

~~Further, that said agency is then authorized to issue an operation permit with said permit setting forth, in detail, the specific terms of the time and opacity limitations granted.~~

Sec. 3. Violation of Other Regulations

(a) ~~Single Stacks. A violation of Sec. 1 of this Regulation shall constitute prima-facie evidence of a violation of any applicable particulate emission control regulation of the Board, but may be refuted by a stack emission test conducted in accordance with the Board's Source Sampling Policy, or other evidence acceptable to the Board. No violation shall have occurred if it can be shown the emissions are exempt under Section 2 of this Regulation or due to a malfunction providing the requirements of Section 4 are adhered to.~~

(b) ~~Multiple Stacks. For facilities with multiple stacks, each stack must comply separately with the opacity limitations of Sec. 1, except as allowed in Sec. 2, even though the multiple stacks, as a group, are in compliance with the limitations of the Board's applicable particulate emission control regulations.~~

Sec. 4. Malfunctions

(a) Malfunction. For the purpose of this regulation shall mean any sudden, unforeseen, or unavoidable failure of air pollution control equipment, or combustion or process equipment to operate in a normal manner and in compliance with all applicable regulations of the Board.

(b) Reporting. When a malfunction of any combustion or process operation or air pollution control equipment lasts more than one hour, the Technical Secretary shall be notified by telephone, or telegraph, as soon as practicable, but in no event later than four daytime business hours after the beginning of said occurrence. Information of the scope and expected duration of the malfunction shall be provided. A record shall be kept of all malfunctions, including start ups, or other events which result in violations of Sec. 1 and Sec. 2, and such record shall be made available to the Board upon request.

(c) Maintenance. Source operators are responsible for operating and maintaining all equipment and processes in compliance with all applicable regulations of the Board. The Board recognizes that malfunctions may occur for many and varied reasons. Curtailment of operations shall be required, except as covered in Sec. 4(d), if the source is not in compliance at least 90 percent of the operating time over the most recent 12-month period. Where the record shows repeated malfunctions exceeding 5 percent of the normal operational time attributed to improper maintenance of faulty equipment, the Board may require that the maintenance program be improved or that the defective or faulty equipment be replaced. To eliminate long term malfunction periods resulting from delays in obtaining replacement parts, an adequate stock of replacement parts shall be maintained.

(d) Malfunction Emission Reduction Program. Malfunctions of air pollution control equipment, and combustion and process equipment may result in increased emissions such that the air quality standards may be violated or that health hazards may occur. It is recognized that a variety of steps, including complete shut down of the equipment involved, can be taken to reduce the amount of emissions to a reasonable value. Any source that has an emission rate in excess of 2000 pounds per hour of any pollutant following a malfunction, or because of the health hazard created by a lesser emission rate than that specified, shall submit a malfunction emission reduction program. Such a malfunction emission reduction program shall be submitted to the Board within 60 days after promulgation of this regulation for its approval. Documentation shall include, but not be limited to, the normal operating emission rate, the malfunction emission rate, and the program proposed to reduce emissions to a reasonable emission rate. The program shall be based on the best practical estimates of type and number of malfunctions experienced during the past 12 months of normal operation, and the scope and duration of such malfunctions.

~~Sec. 5. Federal New Source Performance Standards. In addition to the requirements set forth herein, all new sources for which federal standards have been promulgated shall comply with the applicable portions of the Federal New Source Performance Standards 40 CFR Part 60.~~

Promulgated October 7, 1974

CHAPTER 5
EXCEPTIONS

400—5.1(455B) Exceptions due to maintenance or breakdowns.

5.1(1) *Maintenance of power or heating plant.* When building a new fire, when manually cleaning a fire, or when blowing tubes and flues in a power plant, heating plant or domestic heating plant, visible air contaminants of an appearance, density or shade equal to or darker than that designated as Number 2 on the Ringelmann Chart, or 40 percent opacity, may be emitted into the atmosphere for a period or periods aggregating not more than six minutes in any 60-minute period.

5.1(2) *Cleaning of pollution control equipment.* When cleaning pollution control equipment which does not require a shutdown of equipment, particulate matter may be emitted in excess of the limitations specified in chapter 4 of these rules for a period or periods aggregating not more than six minutes in any 60-minute period.

5.1(3) *Repair or maintenance.* Abnormal conditions, breakdown or emergency maintenance of pollution control equipment or related operating equipment, which causes emissions in excess of the limitations specified in chapter 4 shall not be deemed violations provided that the provisions specified in paragraphs "*a*" and "*b*", below, are followed.

a. Report of conditions. The person responsible for the equipment causing such emissions shall notify the executive director by the next regular working day of the department.

b. Action to correct condition. The person responsible for such equipment causing such emissions shall, with all practicable speed, initiate and complete appropriate reasonable action (1) to correct the conditions causing emissions to exceed said limits, (2) to reduce the frequency of occurrence of such conditions, (3) to minimize the amount by which said limits are exceeded, and (4) to reduce the length of time for which said limits are exceeded; and shall submit to the executive director, at his request, a full report of such occurrence, including a statement of all known causes, and of the scheduling and the nature of the actions to be taken pursuant to these rules.

These rules are intended to implement chapter 455B, Code 1975.

[Filed August 24, 1970; amended May 2, 1972, December 11, 1973, December 17, 1974]

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B. ~~Exception to Section A of this regulation may be granted by the Department, upon request, provided that such action is intended to convert the physical and/or chemical nature of the contaminant emission and that failure to reduce total contaminant emissions results solely from the introduction of contaminants which are not deemed to be detrimental to the public interest. (Authorized by K. S. A. 1970 Supp. 65-3005, 65-3006, 65-3010: Effective January 1, 1971)~~

28-19-11 EXCEPTIONS DUE TO BREAKDOWNS OR SCHEDULED MAINTENANC

A. Abnormal operating conditions resulting from malfunction breakdown, and or necessary repairs to control or processing equipment and appurtenances which cause emissions in excess of the limitations specified in the emission control regulations shall not be deemed violations provided that:

(1) The person responsible for the operation of the emission source notifies the Department of the occurrence and nature of such malfunctions, breakdown, or repairs, in writing, within ten (10) days of noted occurrence.

(2) The number of occurrences of such breakdowns is not deemed excessive by the Department and appropriate reasonable action is taken to initiate and complete any necessary repairs and place the equipment back in operation as quickly as possible. (Authorized by K. S. A. 1970 Supp. 65-3005, 65-3006, 65-3010: Effective January 1, 1971, Amended January 1, 1972)

B. Emissions in excess of the limitations specified in these emission control regulations resulting from scheduled maintenance of control equipment and appurtenances will be permitted only on the basis of prior approval by the Department and upon demonstration that such maintenance cannot be accomplished by maximum reasonable effort, including off-shift labor where required, during periods of shutdown of any related equipment.

C. Excessive contaminant emissions from fuel burning equipment used for indirect heating purposes resulting from fuel or load changes, start up, soot blowing, cleaning of fires, and rapping of precipitators will not be deemed violations provided that they do not exceed a period or periods aggregating more than five (5) minutes during any consecutive one (1) hour period. Provided, however, that where the operator of such equipment can demonstrate to the satisfaction of the Department that any such specific operational procedures will require that the allowable time period for excessive emissions be extended beyond five (5) minutes during any one hour, the Department may authorize, upon request of the operator, an adjusted time schedule for permitting such excessive emissions. Such authorization shall require that visible emissions not exceed an opacity of 60 percent; and shall specify an appropriate time and daily frequency schedule for such excessive emissions. (Authorized by K. S. A. 1970 Supp. 65-3005, 65-3006, 65-3010: Effective January 1, 1971, Amended January 1, 1973, Amended January 1, 1974)

~~28-19-12 MEASUREMENT OF EMISSIONS~~

A. ~~The Department may require any person responsible for the operation of an emission source to make or have tests made to determine the rate of contaminant emissions from the source whenever it has reason to believe on the basis of estimates of potential contaminant emission rates from the source and due consideration to probable efficiency of any existing control device, or visible emission determinations made by an official observer, that existing emissions exceed the limitations specified in these control regulations. Such tests may also be required pursuant to verifying that any newly installed control device meets performance specifications. If such a test demonstrates that the applicable emission requirement is met, no more than one (1) such test shall be required during any twelve (12) consecutive calender month period. Provided, however, that should the Department determine that the test do not represent normal operating conditions or emissions additional tests may be required. Such a requirement shall be considered as an order as provided for in K. S. A. 1970 Supp. 65-3011 and subject to all administrative and legal requirements specified therein.~~

~~Required tests shall be conducted in accordance with procedures approved by the Director as being in accordance with sound analytical and sampling procedures. Such tests shall be conducted by reputable, qualified individuals, as approved by the Department, and a certified written copy of the test results signed by the person conducting the test shall be provided to the Department.~~

B. ~~The Department may conduct tests of emissions of contaminants from any source. Upon written request from the Department, the person responsible for the source to be tested shall cooperate with the Department in providing all necessary test ports in stacks or ducts and such other safe and proper facilities, exclusive of instruments and sensing devices, as may be reasonably required to conduct the test with due regard being given to expenditures and possible disruption of normal operation of the source. A report concerning the findings of such tests shall be furnished to the person responsible for the source upon request.~~

C. ~~The Director may require the owner or operator of any emission source which is subject to the provisions of these regulations to install, use, and maintain such stationary monitoring equipment as is required to demonstrate continuing compliance with any applicable emission limitations, and to maintain records and make reports regarding such measured emissions to the Department in a manner and on a schedule to be determined by the Director.~~

~~(6) This section shall not apply to those sources listed in Subsection (4) of Section 6 of this regulation.~~

~~(7) Permits and compliance schedules issued under this regulation are not transferable.~~

~~Section 8. Monitoring Records and Reporting~~

~~(1) The Department may require the owner or operator of any affected facility to install, use, and maintain stack gas and ambient air monitoring equipment in accordance with such methods as the Department shall prescribe, establish and maintain records of same and make periodic emission reports at intervals prescribed by the Department. Requirements for specific affected facilities are contained in applicable regulations.~~

~~Section 9. Sampling and Testing Methods~~

~~(1) The Department may require the owner or operator of any affected facility to sample emissions in accordance with such methods as the Department shall prescribe. All tests shall be made under the direction of persons qualified by training and/or experience in the field of air pollution control.~~

~~(2) The Department may conduct tests of emissions of air contaminants from any source. Upon request of the Department the person responsible for the source to be tested shall provide necessary openings in the stacks or ducts and such safe and proper sampling and testing facilities, exclusive of instruments and sensing devices, as may be necessary for proper determination of the emission of air contaminants.~~

Section 10. Emissions during Shutdown and Malfunction of Control Equipment

(1) Emissions which, due to shutdown or malfunction of air pollution control equipment, temporarily exceed the standard set forth by the Department shall be deemed in violation of such standards unless the requirements of this section are satisfied and the determinations specified in Subsection (4) of this section are made.

(2) When emissions during any planned shutdown and ensuing startup of air pollution control equipment or part thereof exceed the standards, the owner or operator of the source shall notify the Director no later than three (3) days before the planned shutdown. However, if the shutdown is necessitated by events which the owner or operator could not reasonably have foreseen three (3) days before the shutdown, then such notification shall be given immediately following the determination to shutdown. The notice shall be in writing and shall specify the name of the air contaminant

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source, its location, the address and telephone number of the person responsible for the source, the reasons for and duration of the proposed shutdown, the nature of the action to be taken during shutdown, the date and time for the action, the physical and chemical composition, rate and concentration of the emissions during such shutdown and ensuing startup, the basis for determination that such shutdown is necessary, and the measures which will be taken to minimize the extent and duration of the emissions during such shutdown and ensuing startup.

(3) When emissions due to sudden and unforeseen malfunction (or to unforeseen shutdown associated with malfunction) of air pollution control equipment are or may be in excess of the standards, the owner or operator shall notify the Director by telephone as promptly as possible, and shall cause written notice when requested by the Director to be sent to the Director. Such notice shall specify the name of the source, its location, the address and telephone number of the person responsible for the source, the nature and cause of the malfunction, the date and time when such malfunction was first observed, the expected duration, the nature of the action to be taken to correct the malfunction, and an estimate of the physical and chemical composition, rate and concentration of the emission.

(4) Nothing in this section shall relieve a source from compliance with the standards set forth by the Department unless the Director determines that:

(a) The occurrence in question did not result from the failure by the owner or operator of the source to operate and maintain properly the air pollution control equipment;

(b) All reasonable steps were taken to correct, as expeditiously as practicable, the conditions causing the emissions to exceed the standards, including the use of off-shift labor and overtime if necessary, and;

(c) All reasonable steps were taken to minimize the emissions resulting from the occurrence.

(5) The Director shall notify the owner or operator of the source of the determination required by this section no later than sixty (60) days after the date that all information required by this section has been submitted. Failure of the Director to give such notification within sixty (60) day period shall have the same effect as a determination that the occurrence is deemed not to be a violation of the standards.

(6) Nothing in this section shall be construed to restrict the Secretary's discretion to take, at any time, appropriate enforcement action under KRS 224.071, if upon information supplied to him pursuant to this section, or otherwise available to him, he determines that such action is necessary to protect the health or welfare.

~~(f) Each performance test shall consist of three (3) separate runs using the applicable test method. Each run shall be conducted for such time and under such conditions specified in the applicable standard. For the purpose of determining compliance with an applicable standard, the arithmetic mean of the results of the three (3) runs shall apply. In the event that a sample is accidentally lost or conditions occur in which one (1) of the three (3) runs must be discontinued because of forced shutdown, failure of an irreplaceable portion of the sample train, extreme meteorological conditions, or other circumstances, beyond the owner or operator's control, compliance may, upon the Department's approval, be determined using the arithmetic mean of the results of the two (2) other runs.~~

~~(4) Ambient Air Monitoring~~

~~Persons owning or operating any affected facility for which a standard is prescribed in this regulation when required by the Department shall install, use, and maintain ambient air monitoring equipment in accordance with methods prescribed in United States Environmental Protection Agency Regulations on National Primary and Secondary Ambient Air Quality Standards (40 CFR 50) and in such number and frequency prescribed by the Department, and shall make periodic ambient air monitoring reports at intervals prescribed by the Department.~~

(5) Compliance with standards and maintenance requirements.

~~(a) Compliance with standards in this regulation, other than opacity standards, shall be determined only by performance tests established by Subsection (3) of this section.~~

~~(b) Compliance with opacity standards in this regulation shall be determined by conducting observations in accordance with the reference method as defined in Subsection 1 (2) (g). Opacity readings of portions of plumes which contain condensed, uncombined water vapor shall not be used for purposes of determining compliance with opacity standards. The results of continuous monitoring by transmissometer which indicate that the opacity at the time visual observations were made was not in excess of the standard are probative but not conclusive evidence of the actual opacity of an emission, provided that the source shall meet the burden of proving that the instrument used meets (at the time of the alleged violation), performance specification as required by the Department, has been properly maintained and (at the time of the alleged violation) calibrated, and that the resulting data have not been tampered with in any way.~~

(c) The opacity standards set forth in this regulation shall apply at all times except during periods of startup, shutdown, malfunction, and as otherwise provided in the applicable standard.

(d) At all times, including periods of startup, shutdown, and malfunction, owners and operations shall, to the extent practicable, maintain and operate any affected facility including associated air pollution control equipment in a manner consistent with good air pollution control practice for minimizing emissions. Determination of whether acceptable operating and maintenance procedures are being used will be based on information available to the Department which may include, but is not limited to, monitoring results, opacity observations, review of operating and maintenance procedures, and inspection of the source.

(e) 1. ~~An owner or operator of an affected facility may request the Department to determine opacity of emissions from the affected facility during the initial performance tests required by Subsection (3) of this section.~~

2. ~~Upon receipt from such owner or operator of the written report of the results of the performance tests required by Subsection (3) of the section, the Department will make a finding concerning compliance with opacity and other applicable standards. If the Department finds that an affected facility is in compliance with all applicable standards for which performance tests are conducted in accordance with Subsection (3) of this section, but during the time such performance tests are being conducted fails to meet any applicable opacity standard, the Department shall notify the owner or operator and advise it that it may petition the Department within ten (10) days of receipt of notification to make appropriate adjustment to the opacity standard for the affected facility.~~

3. ~~The Department will grant such a petition upon a demonstration by the owner or operator that the affected facility and associated air pollution control equipment was operated and maintained in a manner to minimize the opacity of emissions during the performance tests; that the performance tests were performed under the conditions established by the Department; and that the affected facility and associated air pollution control equipment were incapable of being adjusted or operated to meet the applicable opacity standard.~~

(6) Circumvention

~~No owner or operator subject to the provisions of the regulation shall build, erect, install, or use any article, machine, equipment or process, the use of which conceals an emission which would otherwise constitute a violation of an applicable standard. Such concealment includes, but is not limited to, the use of gaseous diluents to achieve compliance with an opacity standard or with a standard which is based on the concentration of a pollutant in the gases discharged to the atmosphere.~~

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(3) Standard for Particulate Matter

(a) ~~No person shall cause, suffer, allow or permit the emission into the open air of particulate matter from any indirect heat exchanger in a region classified as Priority I with respect to particulate matter which is greater than twenty (20) percent opacity.~~

(b) ~~No person shall cause, suffer, allow or permit the emission into the open air of particulate matter from any indirect heat exchanger in a region classified as Priority II or Priority III with respect to particulate matter which is greater than forty (40) percent opacity.~~

(c) ~~The provisions of Subsections (1) and (2) shall not apply to:~~

1. ~~Emissions into the open air of particulate matter from any indirect heat exchanger during building a new fire, cleaning the fire box, or blowing soot, for a period or periods aggregating not more than:~~

    a. ~~Two (2) minutes in any sixty (60) minutes which is less than or equal to forty (40) percent opacity for indirect heat exchangers described in Subparagraph (a);~~

    ~~Six (6) minutes in any sixty (60) minutes which is less than or equal to sixty (60) percent opacity for indirect heat exchangers described in Subparagraph (b).~~

2. During emergency conditions caused by an unavoidable breakdown provided the Department is notified promptly.

3. ~~Emissions from each waterwall indirect heat exchanger during startup operations.~~

(d) ~~No person shall cause, suffer, allow or permit the emission of particulate matter from indirect heat exchangers if the particulate matter emitted exceeds the quantity specified in Table 1 which is incorporated as part of this regulation.~~

(e) ~~Exceptions~~

~~The emission limitations contained in other subsections of this section shall not apply to those indirect heat exchangers which were in compliance prior to April 9, 1972 with, or have valid permits to operate within, the provisions of the previous Kentucky Air Pollution Control Commission Regulation No. 7 entitled "Prevention and Control of Emissions of Particulate Matter from Combustion of Fuel in Indirect Heat Exchangers." These sources shall comply with the emission limitations contained in that regulation.~~

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provisions of these regulations would cause undue hardship, would be unreasonable, impractical or not feasible under the circumstances, the Technical Secretary may permit a variance from these regulations.

17.7.2 No variance may permit or authorize the maintenance of a nuisance, or a danger to public health or safety.

17.8 Circumvention. No person shall cause or permit the installation or use of any device or any means which, without resulting in reduction in the total amount of air contaminants emitted, conceals or dilutes an emission of air contaminants which would otherwise violate these regulations.

*17.9 To aid in controlling the overall levels of air contaminants in the atmosphere, air pollution control facilities should be installed whenever practically, economically, and technologically feasible. When facilities have been installed on a property they shall be used and diligently maintained in proper working order whenever any emissions are being made which can be controlled by the facilities, even though the ambient air quality standards in affected areas are not exceeded.

*17.10 No person or persons owning, leasing, renting or controlling the operation of any source of air contaminants shall cause, suffer, allow or permit emissions from their source of air contaminants which will result in "undesirable levels" as defined in Section 4.74 herein in the atmosphere over properties other than that of the person owning, leasing, renting or controlling the operation of such source.

**17.11 Notification Required. Pursuant to 6.1 the Department must be notified promptly of emergency occurrences or upsets that will substantially increase emissions. Immediate telephone notification should be followed promptly by written notification, within 7 calendar days, giving details of the occurrence and remedial actions. Timely and appropriate follow-up reports should be made detailing the methods or procedures to be used to prevent similiar atmospheric releases. Such notification does not imply the Technical Secretary will automatically grant an exemption to the source(s) of excessive emissions.

**17.12 Emission Inventory. An updated report must be submitted semiannually, if there has been any significant change in reported annual emission rates. A significant change is one in which the annual emission rate of any individual pollutant from any individual emission point changes more than ten percent from reported annual values.

**17.13 Reports. Reports must be made to the Department semiannually. These reports are to be submitted to the Department by January 20, and July 20. The report should include all data applicable to the emission source or sources which may be required under Section 6.10.2, 8.5.1 or 17.11 of the regulations. In any event, data should confirm the facility remained in compliance during the six month period or achieved the prescribed milestones to ultimately achieve compliance.

18.0 Control of Air Pollution from Smoke.

*18.1 It is the purpose of this regulation to establish emission standards on smoke to prevent undesirable levels of this air contaminant from occurring.

*18.2 Control of Smoke. The emission of smoke from any combustion unit (other than a flare, as described in Section 18.3 below) or from any type of burning in a combustion unit (other than a flare), including the incineration of industrial, commercial, institutional and municipal wastes, shall be controlled so that the shade or appearance of the emission is not darker than No. 1 on the Ringelmann Smoke Chart (or of such opacity) as to obscure vision to a degree equivalent to the above except that emitted during the cleaning of a fire box or the building of a new fire, soot blowing or lancing, charging of an incinerator, equipment changes, ash removal and rapping of precipitators may be darker than No. 1 on the Ringelmann Smoke Chart (or the equivalent opacity) for a period or periods aggregating not more than four minutes in any sixty consecutive minutes.

*18.3 The emission of smoke from a flare or other similar device used for burning in connection with pressure valve releases and for control over process upsets shall be controlled so that the shade or appearance of the emission is not darker than No. 1 on the Ringelmann Smoke Chart more than an aggregate time of six hours in any ten consecutive days. If it appears the emergency cannot be controlled in six hours, the Commission shall be notified by the emitter as soon as possible after the start of the upset period. Such notification does not imply the Technical Secretary will automatically grant an exemption to the source(s) of excessive emissions.

18.4 The restrictions in 18.3 shall not apply during shutdown and start-up periods.

*18.5 The emission of smoke which passes onto or across a public road and creates a traffic hazard by impairment of visibility as defined in 4.34 or intensifies an existing traffic hazard condition is prohibited.

18.6 Exclusions from application of this section. The following matters are excluded from application of this section:

18.6.1 Emissions of smoke pursuant to and in compliance with the terms of a variance granted by the Commission.

*18.6.2 Emissions of smoke from an activity when both of the following conditions are met:

(a) The source of emissions is in a relatively unpopulated area of the state.

(b) The Commission determines it is not technically practicable nor economically reasonable to eliminate the emissions.

18.6.3 Where the presence of uncombined water is the only reason for failure of an emission to meet the requirements of Section 18.2 of this regulation, Section 18.2 will not apply.

*18.7 Any person claiming exclusion from the application of this section under this provision shall apply to the Commission through the Technical Secretary for exclusion in accordance with Section 2211 of the Act. The applicant shall furnish such information as the Commission may reasonably require to enable it to make a determination. The Commission may make such determination and apply such conditions as may be appropriate to the activity in question. A person granted an exclusion under this provision may be required to furnish the Commission with plans satisfactory to the Commission for implementing any reasonable control measures which may be developed or which otherwise become available.

19.0 Emission Standards for Particulate Matter.

19.1 Purpose. The purpose of this section shall be to limit the quantity of particulate matter emitted.

*19.2 Scope. This section applies to any operation, process, or activity from which particulate matter and/or suspended particulate matter is emitted except the wood pulping industry, the primary aluminum industry (horizontal stud Soderberg and prebake processes), and the burning of fuel for indirect heating in which the products of combustion do not come into direct contact with process materials.

19.3 Control of Fugitive Emissions. All reasonable pre-

[illegible] This emission standard shall become effective in all regions as follows:

a. [illegible]

b. June 1, 1975 for all existing sources.

2. Emission standard. No person shall emit or cause to be emitted any sulfur dioxide emissions from [illegible] within the scope of this emission standard in excess of [illegible]

3. Test methods and procedures. Test methods 1 and 6 as promulgated by the administrator of the United States Environmental Protection Agency in Regulation [illegible] published in the Federal Register, volume 36, number 247, December 23, 1971, or such other methods as are deemed equivalent by the Board shall be used to determine compliance with this regulation.

1973, c. 438, § 8.

§ 605. Malfunctions

Any person owning or operating any emission source that suffers a malfunction or breakdown in any component part which malfunction or breakdown causes a violation of sections 598 to 604 shall notify the Board in writing within 48 hours.

§ 606. Nonpoint sources or indirect sources; review of public ways

1. Prohibition. No person, firm, corporation, municipality, state agency or other entity shall commence construction of any highway project of 4 or more lanes in the State unless the Board of Environmental Protection has first determined that the project will not violate the State of Maine Ambient Air Quality Standards. The person or agency proposing to construct a highway resulting in 4 or more lanes shall submit to the Department of Enviornmental Protection an air quality impact analysis. This analysis shall be conducted in accordance with such mathematic modeling techniques as are mutually acceptable to the department, The Federal Environmental Protection Agency and the Federal Highway Administration.

2. Exemptions. The foregoing shall not apply, however, to highway projects that will have no significant effect on air quality, such as lights, signs, landscaping and resurfacing.

3. Scope. The requirements of this section shall apply in all the air quality regions of the State.

4. Effective date. Section 606 of this Act shall be retroactive to April 10, 1974.

1975, c. 282, §§ 6 & 7.

§ 607. Municipal alternative

1. Cone burners. The provisions of this chapter shall not apply to cone burners constructed or operated by any municipality, group of municipalities, quasi-municipal corporations or district, providing a system of solid waste management for public purposes and for the health, welfare, comfort and convenience of the inhabitants of the district; provided that the population served does not exceed 25,000 people and that proper leachate control, ash sifting and ash disposal is accomplished in a legal manner and provided that the public health, safety and welfare are not adversely affected by the emissions of this type of unit. In determining the effect on public health, safety and welfare and before ordering the closing of any cone burner operation, the Department of Environmental Protection shall show that the operation of the burner violates the standards set forth in section 584-A.

2. Notification. Any municipality, group of municipalities, quasi-municipal corporations or district shall notify the Department of Environmental Protection of its intent to construct and operate a cone burner and may request technical assistance be provided by the department.

1975, c. 570; 1976, c. 770, § 212.

§ 608. Stationary source performance standards

.07 MALFUNCTION OF AN INSTALLATION

Requirement for Notification. When a malfunction in any installation occurs that can be expected to increase the emissions, and to continue for a period greater than 4 hours, the person shall notify the Control Officer or the Department by telephone. On receipt of this notification, the Control Officer may permit the continuance of the operation for a period not to exceed 10 days provided that written application is made to the Control Officer. Such application shall be made within 24 hours of the malfunction or within such other time period as the Control Officer may specify. In cases of major equipment failure, additional time period may be granted by the Control Officer provided a corrective program has been submitted by the person and approved by the Control Officer.

.08 ~~RESERVED~~

.09 ~~MOTOR VEHICLE EMISSIONS~~

A. ~~Removal of Control Devices. A person shall not remove, alter, or otherwise render inoperative, exhaust emission control, crank case ventilation or any other air pollution control device which has been installed as a requirement of Federal law or regulation.~~

B. ~~Operation of Motor Vehicles. A person shall not operate a motor vehicle originally equipped with air pollution control devices as required by Federal law or regulation unless such devices are in place and in operating condition.~~

C. ~~Exceptions. The requirements of Subsection .09A and .09B shall not apply to an alteration or modification to use a fuel other than gasoline where it has been shown that the emissions from such modified or altered vehicle are at levels which comply with existing state or Federal standards for emissions from motor vehicles.~~

.10 ~~RECORDS AND INFORMATION~~

~~General. For the purpose of developing or assisting in the development of any implementation plan, standard of performance, emission standard or the enforcement of any regulation contained herein, the Department shall, at reasonable times, have access to and be permitted to copy any records of any fuel supplier in order to determine to whom fuel is distributed or sold, in what quantity and what type. All information obtained under this section shall be entitled to protection as trade secrets and the Department shall keep such information confidential.~~

.11 PERMITS

A. ~~Permit to Construct. A person shall not cause or permit the construction, modification or alteration of any installation except as provided for in subsection .11G without first having obtained a "Permit to Construct" from the Department. A "Permit to Construct" shall be void if the construction, modification or alteration is not begun within one year from the date of issuance of if the work involved in construction, modification or alteration is suspended for one year or more from the date of issuance.~~

~~On and after July 1, 1973 no person shall cause, suffer, allow, or permit the operation of a fossil fuel utilization facility, having an energy input capacity rated by the Department of ten million (10,000,000) or greater B.t.u./hour, in a manner that is not in conformance with a Standardard Operating Procedure that has been approved in writing by the Department. On July 1st of each calendar year, the Standard Operating Procedure is subject to revision by the Department.~~

4.4 U Removal of Air Pollution Control Equipment

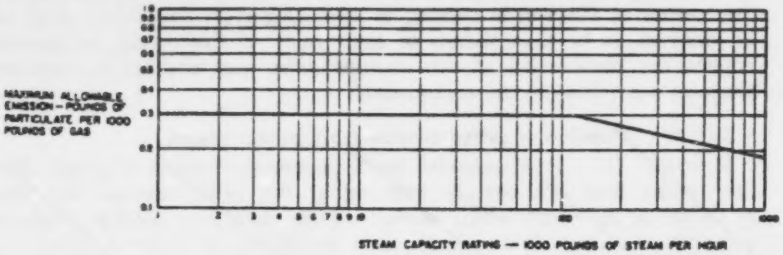
4.4.1 No person shall cause, suffer, allow, or permit the removal, alteration or shall otherwise render inoperative any air pollution control equipment which has been installed as a requirement of these regulations, other than for reasonable maintenance periods or unexpected and unavoidable failure of equipment.

~~4.5 U Circumvention~~

~~4.5.1 No person shall cause, suffer, allow, or permit the installation or use of any material, article, machine, equipment, or contrivance which conceals an emission without reducing the total weight of emissions where such emissions would constitute a violation of any applicable regulation.~~

R 336.44.

FIGURE 1



Note: It is required that a maximum allowable emission rating be applied for to the Air Pollution Control Commission for all pulverized coal (and cyclone) furnaces having capacity ratings in excess of 1 million pounds of steam per hour.

~~R 336.45. Open Burning.~~

~~Rule 45. (1) A person shall not cause or permit open burning except burning of:~~

~~(a) Waste disposal of material from and at 1 or 2 family dwellings where the burning does not violate any other of the commission's rules.~~

~~(b) Structures and other materials used exclusively for fire prevention training if prior approval is obtained from the commission.~~

~~(c) Trees, logs, brush and stumps in accordance with applicable state and local regulations if the burning is not conducted closer than 1400 feet to an incorporated city or village limit and if the burning does not violate any other of the commission's rules.~~

~~(2) These exceptions do not authorize burning where prohibited by local law or regulation.~~

~~R 336.46. Air contaminant or water vapor, when prohibited.~~

~~Rule 46. A person shall not cause or permit the emission of an air contaminant or water vapor, including an air contaminant whose emission is not otherwise prohibited by these rules, or an air contaminant or water vapor which reacts or may react with any other air contaminant or natural air, and which causes or will cause detriment to the safety, health, welfare or comfort of any person, or which causes or will cause damage to property or business.~~

~~R 336.47. Diluting and concealing emissions.~~

~~Rule 47. Unless prior written approval is obtained from the commission, no person shall build, erect, install or use any article, machine, equipment or other contrivance, the sole purpose of which is to dilute or conceal an emission without resulting in a reduction in the total release of air contaminants to the atmosphere. This rule does not apply to the control of odors.~~

R 336.48. Abnormal conditions and breakdown of equipment.

Rule 48. Emissions exceeding any of the limits established in rules as a direct result of abnormal conditions in or breakdown of a process, fuel-burning, refuse-burning, control or related operating equipment beyond the control of the person owning or operating such equipment shall not be deemed to be in violation of such rules, if the owner or operator advises the commission of the circumstances and outlines a corrective program acceptable to the commission.

~~**R 336.49. Emission of sulfur dioxide from power plants.**~~

~~Rule 49. (1) It is unlawful for a person to burn in a power plant fuel which does not comply with either the sulfur content limitation of Table 3, or which when burned results in sulfur dioxide emissions exceeding an equivalent emission rate as shown in Table 4, unless the following conditions are met:~~

~~(a) The source of fuel burning is not subject to federal emission standards for new stationary sources.~~

~~(b) An installation permit, if required by part 2, was approved by the commission before August 17, 1971.~~

~~(c) The user furnishes evidence that the fuel burning does not create, or contribute to, an ambient level of sulfur dioxide in excess of the applicable ambient air quality standards. The evidence shall consist of air quality data or stack dispersion calculations, or both, satisfactory to the commission.~~

~~(d) The user is operating in compliance with a voluntary agreement, order, stipulation or variance from the commission.~~

~~(2) Notwithstanding the provisions of subrule (1), an exception from the limitations of Table 3 will not be permitted after January 1, 1980 unless specific authorization is granted by the commission.~~

~~(3) A person responsible for operation of a source which on the effective date of the 1973 amendment to this rule, or for any anticipated time in the future, is or will be using fuel with a sulfur content in excess of that allowed to be burned on July 1, 1978 as listed in Table 3, or which on such effective date or any anticipated time in the future is or will be emitting sulfur dioxide in excess of the equivalent emission for that fuel as shown in Table 4, shall submit to the commission a written program for compliance with this rule within 60 days after such effective date. This requirement does not apply to a source for which the commission has approved an exception to Table 3 under the provisions of subrule (1).~~

~~(4) The program required by subrule (3) shall include the method by which compliance will be achieved, a complete description of new equipment to be installed or modifications to existing equipment to be made and a timetable which specifies, as a minimum, the dates by which: (a) equipment will be ordered, (b) construction or modification of equipment will begin, (c) initial startup of equipment will begin and (d) emissions will be reduced to levels shown in Tables 3 and 4.~~

~~(5) The commission may allow any source which is required to submit a compliance program under subrule (3) an extension to the programmed compliance date if the following conditions are met:~~

~~4. When no excess emissions have occurred or the continuous monitoring system(s) have not been inoperative, repaired, or adjusted, such information shall be stated in the report.~~

~~(2) Other Data. The owner or operator of any affected facility shall maintain a file of all measurements, including continuous monitoring system, monitoring device, and performance testing measurements; all continuous monitoring system performance evaluations; all continuous monitoring system or monitoring device calibration checks; adjustments and maintenance performed on these systems or devices; and all other information required by any regulation and shall keep that file in a permanent form suitable for inspection. The file shall be retained for at least two years following the date of such measurements, maintenance, reports, and records.~~

(3) Breakdowns. The owner or operator of an affected facility shall maintain records of the occurrence and duration of any startup, shutdown, breakdown, or malfunction in operation of the facility or any air pollution control equipment. The owner or operator shall maintain records of any periods of time in which a continuous monitoring system or monitoring device is inoperative. These records shall be retained for at least two years following the date of such shutdown, startup, breakdown, malfunction, or inoperation. These records shall be submitted to the Agency at such times as the Director may require.

~~(4) Emission Inventory. All owners or operators of emission facilities which emit more than 25 tons per year of particulate matter, sulfur oxides, nitrogen oxides, carbon monoxide, or hydrocarbons shall submit on or before April 1st of each year an emission inventory report covering the previous calendar year.~~

(d) Shutdowns and Breakdowns

(1) Shutdown. The owner or operator of an emission facility shall notify the Director at least 24 hours in advance of shutdown of any control equipment and, if the shutdown would cause an increase in the emission of air contaminants, of a shutdown of any process equipment. At the time of notification, the owner or operator shall also notify the Director of the cause of the shutdown and the estimated duration. The owner or operator shall notify the Director when the shutdown is over.

(2) Breakdown. The owner or operator of an emission facility shall notify the Director immediately of a breakdown of more than one hour duration of any control equipment and, if the breakdown causes an increase in the emission of air contaminants, of a breakdown of any process equipment. At the time of notification or as soon thereafter as possible, the owner or operator shall also notify the Director of the cause of the breakdown and the estimated duration. The owner or operator shall notify the Director when the breakdown is over.

(3) Operation Changes. In any shutdown or breakdown covered by subparagraph (1) or (2) above, the owner or operator shall immediately take all practical steps to modify operations to reduce the emission of air contaminants. The Director may require feasible and practical modifications in the operation to reduce emissions of air contaminants. No affected facility which has an unreasonable breakdown frequency of control equipment shall be permitted to operate. Nothing in this regulation shall permit the operation of an affected facility which may cause an immediate public health hazard.

~~Fahrenheit and a pressure of 14.7 pounds per square inch absolute.~~

~~22. "Smoke." Small gas-borne particles resulting from incomplete combustion and consisting predominantly, but not exclusively, of carbon, ash, and other combustible material.~~

~~23. "Soot." Agglomerated particles consisting mainly of carbonaceous material.~~

~~24. "Total reduced sulfur, (TRS)" means hydrogen sulfide, mercaptans, dimethyl sulfide, dimethyl disulfide, and any other organic sulfides present.~~

~~SECTION 3. SPECIFIC CRITERIA FOR SOURCES OF PARTICULATE MATTER~~

~~1. Smoke~~

~~(a) No person shall cause, permit, or allow the emission of smoke from a point source into the open air from any manufacturing, industrial, or commercial process or from any waste disposal process of which the shade is darker than number two (2) on the Ringelmann Smoke Chart.~~

~~(b) Start-up operations may produce darker emissions for up to fifteen (15) minutes per start-up in any one hour and not to exceed three (3) start-ups per stack in any twenty-four (24) hour day.~~

(c) Tolerance may be granted for a darker emission resulting from emergency or breakdown conditions, provided that prompt remedial action is initiated and the Commission is notified.

~~(d) Emissions resulting from soot blowing operations shall be permitted provided such emissions do not exceed a shade of appearance of a Ringelmann No. 3 on the Ringelmann Smoke Chart, and provided further that the aggregate duration of such emissions during any twenty-four (24) hour period does not exceed ten (10) minutes per billion BTU gross heating value of fuel in any one hour.~~

~~2. Equivalent Opacity. No person shall cause, allow, or permit the discharge into the ambient air from any point source or emission whatsoever, any air contaminant of such opacity as to obscure an observer's view to a degree in excess of 40% opacity, equivalent to that provided in Section 3 (1a). This shall not apply to vision obscuration caused by uncombined water droplets.~~

~~3. General Nuisances. No person shall cause, permit, or allow the emission of particles, or any contaminants in sufficient amounts or of such duration from any process as to be~~

MISSISSIPPI

Exemptions from Rules and Regulations

Emissions occurring during major upsets may not be required to meet the allowable emission levels set by the Rules and Regulations upon proper notification if a determination is made by the Executive Director after consultation with appropriate local agencies that the upset conditions were unavoidable and that a shutdown or other correction actions were taken as soon as practicable.

Emissions occurring during start-up or shutdown of processes for maintenance purposes or during periods of maintenance may not be required to meet the allowable emission levels set by the Rules and Regulations if so determined by the Executive Director upon proper notification. The Executive Director may specify the amount, time, and duration of emissions that will be allowed during start-up and shutdown and during periods of maintenance.

MISSOURI

800,000	0.021
1.000,000 or more	0.020

(C) Any volume of gases passing through and leaving an air pollution abatement operation may be substituted for the source gas volume of the source operation served by such air pollution abatement operation, for the purposes of subsection (2) (B), provided such air pollution abatement operation emits no more than 40 percent of the weight of particulate matter entering thereto; and provided further that such substituted volume shall be corrected to standard conditions and to a moisture content no greater than that of any gas stream entering such air pollution abatement operation.

(D) No person shall cause, suffer, allow, or permit the emission of particulate matter from any source in a concentration in excess of 0.30 grain per standard cubic foot of exhaust gases. If provisions of this subsection would permit a greater emission of particulate matter per hour than allowed by subsection (2) (A), the provision of this subsection (2) (D) shall not apply except that the following regulation shall apply to existing grey iron jobbing cupolas. For purposes of this regulation, a jobbing cupola is defined as a cupola which has a single melting cycle no more than 10 hours in any consecutive 24 hours and no more than 50 hours in any consecutive 7 days.

1. All existing grey iron jobbing cupolas shall be equipped with gas cleaning devices and so operated as to remove 85% by weight of all the particulate matter in the cupola discharge gases, or release not more than ¼ grain of particulate matter per standard cubic foot of discharge gas, whichever is more stringent.

2. All gases, vapors, and gas entrained effluents from such cupolas shall be incinerated at a temperature not less than 1200 degrees Fahrenheit for a period of not less than 0.3 second.

(3) Exceptions. The following exceptions to the provisions of this regulation shall be permitted:

(A) When building a new fire,

(B) During the startup, an operational breakdown, or while cleaning air pollution control equipment for any process,

(C) For the grinding, crushing, and classifying operations at a rock quarry, and

(D) For the receiving and shipping of whole grain from or into a railroad or truck transportation source at a grain elevator.

Auth: section 203.050 RSMo (1969). Original rule filed March 14, 1967, effective March 24, 1967. Amended: filed June 30, 1975, effective July 10, 1975.

10 CSR 10-5.060 Refuse Not to be Burned in Fuel Burning Installations

PURPOSE: This regulation prohibits the burning of refuse in any fuel combustion installation.

(1) No person shall burn or cause or permit the burning of refuse in any installation which was designed for the primary purpose of burning fuel.

Auth: section 203.050 RSMo (1969). Original rule filed March 14, 1967, effective March 24, 1967.

10 CSR 10-5.070 Open Burning Restrictions

PURPOSE: This regulation prohibits the disposal of refuse by open burning except as provided under specified conditions.

(1) Refuse Burning Restrictions

(A) No person shall dispose of refuse by open burning, or cause, suffer, allow or permit open burning of refuse.

(B) In areas where no public or commercial refuse collection service is available on the effective date of this regulation, the open burning of refuse on residential premises, of refuse originating in dwelling units on the same premises, shall not be in violation of this regulation until such refuse collection service becomes available or until 3 years from the effective date of this regulation, whichever is sooner.

(C) Regardless of provisions of subsections (1) (A) and (1) (B) of this regulation, open burning on residential premises of refuse originating in dwelling units on the same premises shall not be a violation of this regulation in areas of low population density. The executive secretary, after consultation with public agencies concerned with refuse collection and disposal, shall select and publish the specific boundaries of areas in which such open burning of refuse will not be in violation of this regulation. In selecting such areas, he shall use a density of 100 dwelling units or less per square mile as an approximate definition of areas of low population density and he shall give due consideration to the desirability of having restrictive air pollution control regulations within the conterminous area comprising the St. Louis metropolitan area air pollution basin. The executive secretary shall select

LOCAL AGENCIES

ALLEGHENY CO.

Amendment - Section 1816 - Shutdown or Breakdown of Equipment

I. Existing Section 1816.2 is deleted in its entirety and the following new Section 1816.2 added:

.2 Breakdown

A. For purposes of this subsection, "breakdown" shall mean any sudden or unexpected event which has the effect of causing any air pollution control device, process equipment or any other potential source of air contaminants to fail, malfunction or otherwise abnormally operate in such manner that emissions into the ambient air are, or may be, increased.

B. In the event that any air pollution control device, process equipment or other source of air contaminants breaks down in such manner as to have a substantial likelihood of causing the emission of air contaminants in violation of this Article, or of causing the emission into the ambient air of potentially toxic or hazardous materials, the person responsible for such device, equipment or source shall immediately notify the Director of such breakdown and shall, as expeditiously as possible but in no event later than seven (7) days after the original notification, provide written notice to the Director.

To the maximum extent possible, all oral and written notices required by this subsection shall include all pertinent facts, including:

1. Identification of the specific device or devices which has broken down, its location and permit number (if permitted), together with an identification of all related devices, equipment and other sources which will be affected.
2. The nature and probable cause of the breakdown.

3. The expected length of time that the device will be inoperable or that the emissions will continue.

4. Identification of the specific material(s) which are being, or are likely to be, emitted, together with a statement concerning its toxic qualities, including its qualities as an irritant, and its potential for causing illness, disability or mortality.

5. The estimated quantity of each material being, or likely to be, emitted.

6. Measures, including extra labor and equipment, taken or to be taken to minimize the length of the breakdown, the amount of air contaminants emitted or the ambient effects of the emissions, together with an implementation schedule.

7 Measures being taken to shutdown or curtail the affected source(s) or the reasons why it is impossible or impractical to shutdown the source(s), or any part thereof, during the breakdown.

C. Notices required by subparagraph B. shall be updated, in writing, as needed to advise the Director of changes in the information contained therein. In addition, any changes concerning potentially toxic or hazardous emissions shall be reported immediately. All additional information requested by the Director shall be submitted as expeditiously as practicable.

D. The Director shall immediately be notified when the condition causing the breakdown is corrected or the device, equipment or other source is placed into operation. Within seven (7) days thereafter, written confirmation shall be submitted pursuant to subparagraph B.

E. This subsection shall not apply to breakdown of air pollution control devices which occur during the initial start up of said devices, provided that emissions resulting from the breakdown are of the same nature and quantity as the emissions occurring prior to start up of the air pollution control devices.

F. In no case shall the reporting of a breakdown prevent prosecution for any violation of this Article.

II. In addition, a new Section 1816.4 is added as follows:

.4 Failure to submit any report or notice required by this Section within the time specified shall be a violation of this Article.

Effective: March 31, 1978

~~ing Board, by certified mail, addressed to the address contained in registration on file with the control officer. This section of the ation shall be in full force and effect on September 1, 1960.~~

~~*(Amended October 19, 1972.)*~~

~~§ 3211.1 SOURCE EMISSION DATA. The person responsible for emission of air contaminants, from any emission point, for which emission limits are established in this or any other regulation of the district shall, upon request of the Air Pollution Control Officer provide in connection with such emission point and related source operations source emission data certified by a registered professional engineer in the state of California. Such data shall be in a form and manner prescribed by the Air Pollution Control Officer and shall contain sufficient information to disclose the nature and quantities of air contaminants being emitted from the emission point and related source operations. *(Added May 19, 1976)*~~

§ 3212 UPSET CONDITIONS, BREAKDOWNS OR SCHEDULED MAINTENANCE. **Emissions** exceeding any of the limits established in this regulation as a direct result of upset conditions in or breakdown of any equipment, or as a direct result of the shutdown of such equipment for scheduled maintenance, or its subsequent startup, shall be deemed to be in violation of the rules establishing such limits, unless all the requirements of sections 3212.1 through 3212.5, are met. *(Amended January 7, 1976.)*

§ 3212.1 Upset conditions or breakdown shall be reported to the office of the District immediately with due consideration for public health and safety, including the hazard of fire and explosion. Scheduled maintenance shall be reported to the offices of the District at least 24 hours prior to shutdown. Failure to report excessive emissions shall be deemed to be a violation of this section. *(Amended January 7, 1976.)*

§ 3212.2 Scheduled maintenance shall be accomplished with maximum reasonable effort, including off-shift labor where required to accomplish such maintenance during periods of non-operation, of any related source operations.

§ 3212.3 The person responsible for such emission shall, with all practicable speed, initiate and complete appropriate reasonable action to correct the conditions causing such emissions to exceed said limits; to reduce the frequency of occurrence of such conditions; to minimize the amount by which said limits are exceeded; and to reduce the length of time for which said limits are exceeded.

§ 3212.4 The person responsible for such emissions shall submit to t Air Pollution Control Officer a full report of such occurrence in no cas longer than 30 days after the occurrence, including a statement of all known causes and of the scheduling and nature of the actions taken, or to be taken pursuant to § 3212.3. Failure to comply with any of the requirements of this section shall be deemed to be a violation of this section.

(Amended January 7, 1976.)

§ 3212.5 The frequency or duration of upset conditions, breakdown or scheduled maintenance is not more than is reasonable under all of the circumstances. *(Amended July 27, 1972.)*

§ 3212.6 Section 3212 shall not apply to excessive emissions resulting from upset or breakdown or scheduled maintenance which exceeds 48 hours' duration. *(Added January 7, 1976.)*

~~§ 3213 **SEPARATION OF EMISSIONS.** If air contaminants from a single **source operation** are emitted through two or more **emission points**, the total emitted quantity of any air contaminant limited in this Regulation 2, cannot exceed the quantity which would be the allowable **emission** through a single **emission point**; and the total emitted quantity of any such air contaminant shall be taken as the product of the highest concentration measured in any of the **emission points** and the **exhaust gas volume** through all **emission points**, unless the **person** responsible for the **source operation** establishes the correct total emitted quantity.~~

~~§ 3214 COMBINATION OF EMISSIONS~~

~~§ 3214.1 If air contaminants from two or more **source operations** are combined prior to **emission** and there are adequate and reliable means reasonably susceptible to confirmation and use by the control officer for establishing a separation of the components of the combined **emission** to indicate the nature, extent, quantity and degree of **emission** arising from each such **source operation**, this Regulation 2 shall apply to each such **source operation** separately.~~

~~§ 3214.2 If air contaminants from two or more **source operations** are combined prior to **emission** and the combined **emissions** cannot be separated according to the requirements of § 3214.1 this Regulation 2 shall be applied to the combined **emission** as if it originated in a single **source operation** subject to the most stringent limitations and requirements placed by this Regulation 2 on any of the **source operations** whose air contaminants are so combined.~~

CHICAGO

~~With twenty square feet and less than fifty square feet grate area~~	~~$12.00~~
~~With fifty square feet or more of grate area~~	~~$15.00~~
~~Per one unit operation or one unit process creating atmospheric pollution or any device controlling atmospheric pollution or any compactor~~	~~$ 5.00~~

~~The fee for annual inspection shall include the issuing of a certificate of operation.~~

~~Unfired Pressure Vessels:~~

~~For each unfired pressure vessel less than twelve inches in diameter~~	~~$ 9.00~~
~~For each unfired pressure vessel twelve inches or more in diameter and less than eighteen inches in diameter~~	~~$12.00~~
~~For each unfired pressure vessel eighteen inches or more in diameter and less than thirty-six inches in diameter~~	~~$15.00~~
~~For each unfired pressure vessel thirty-six inches or more in diameter~~	~~$18.00~~

~~Payment of Fees~~

~~17-2.47. All fees or penalties prescribed for the issuance of permits, licenses or certificates, or for the inspection of plans, premises or equipment, under any provision of this chapter, shall be paid to the commissioner, who shall render to the person making such payment a receipt stating the amount and purpose for which such fee or penalty has been paid, a duplicate of which shall be made part of the records of the Department. All fees and penalties thus received shall be deposited with the Director of Revenue for the corporate fund.~~

~~Fees are Debt Due the City — Suit for~~

~~17-2.48. All fees or penalties prescribed for the payment of which is required under any provision of this chapter, shall constitute a debt due the city. The corp tion counsel shall, at the request of the commissioner, institute civil suit in the [illegible] of the city to recover the amount of any such unpaid fee or penalty. No civil judgment, or any act by the corporation counsel, the commissioner, or the violator, shall bar or prevent a criminal prosecution for each and every violation of this chapter.~~

~~Refund of Permit Fees~~

~~17-2.49. In the event the installation of the fuel-burning, combustion or process equipment or device is not completed or that the commissioner or any other authorized officer of any department of the city refuses issuance of a permit for the erection or construction of any building or structure in which such equipment, process or device was to be located, the fee which has been paid for the permit or the certificate of operation may be refunded upon proper presentation of the facts; provided, however, that no refund shall be made after a period of one year from the payment of the fee.~~

~~Remittance of Fees~~

~~17-2.50. The commissioner shall remit all inspection or examination fees charged against any charitable, religious or educational institution when the furnace or other combustion equipment, device or apparatus inspected is located in or upon premises used and occupied exclusively by such institution; provided, however, that such charitable, religious or educational institution is not carried on for, or connected with any institution conducted for private gain or profit. The commissioner may require every application for the remission of such fees to be verified by affidavit of one or more taxpayers of the city.~~

Breakdown of Equipment — Report of; Immunity from Prosecution

17-2.51. In the event of unavoidable failure or breakdown of any fuel-burning, combustion or process equipment or device or other circumstances beyond the control of any person owning or operating such equipment, including necessary shutdowns of smoke abatement or dust collection equipment for purposes of maintenance or repair, which tends to produce unlawful emission of smoke, particulate, or other matter, the owner or managing agent of such equipment or process shall immediately notify the department of such failure, breakdown or other circumstance together with all p

CHICAGO

nent facts relating thereto and a statement of the date upon which the condition will be rectified, and shall also report to it when such defect has been removed. Immunity from prosecution under such circumstances shall be at the discretion of the commissioner.

~~Tests of Fuel-Burning, Combustion or Process Equipment~~

~~17-2-52. The commissioner is hereby authorized to conduct or cause to be conducted, any test or tests as may be necessary to determine the extent of emission of particulate matter from any fuel-burning, refuse-burning, compactor, combustion or process equipment or device, if and when, in his judgment, there is evidence that any such equipment, process or device is exceeding any emission limitation prescribed by or under this chapter. The result of any test shall be made available to the person responsible for such property tested. Tests shall be made and the results calculated in accordance, where applicable, with American Society of Mechanical Engineers "Power Test Codes, Test Code for Determining Dust Concentration in a Gas Stream PTC-27-1957" procedure or Federal Register, Vol. 36, No. 247, dated December, 1971, as revised from time to time or in accordance with modified procedures mutually agreed upon between the commissioner and the person. All tests and calculations shall be made under the direction of a competent engineer. Any test or tests to be conducted on the premises where such equipment or device is located shall be made during reasonable hours, after written notice to, and with the cooperation of, the owner or operator. Test ports are required on all process equipment and incinerators burning more than 500 pounds of refuse per hour. The cost of any test or tests and calculations shall be a debt due the city from any person responsible as owner, operator or otherwise of such fuel-burning, refuse-burning, compactor, combustion or process equipment or device in all cases when such test or tests shall have proven any emission of particulate matter in violation of any provision of this chapter. In all such cases, the costs of the tests shall be an unpaid debt and shall be recoverable in any court of competent jurisdiction.~~

~~Period of Grace~~

~~17-2-53. In the event any person is compelled to, or deems it advisable to, install any new equipment, process or device, appliance, means or methods, including needed control equipment, in order to comply with any provision of this chapter and exemption from the operation of this chapter is reasonably necessary in order to allow sufficient time for such installation, such exemption may be granted by the commissioner on good cause shown. Upon complaint in writing by any such person, setting forth that it is impossible in the operation of any plant, fuel-burning, combustion or process equipment or device, or apparatus, to operate the same in complete compliance with the requirements of this chapter, and stating evidence satisfactory to the commissioner that such person has taken, or will take, all steps necessary to provide for future compliance with the provisions of this chapter, and giving assurance to the commissioner that the acquisition and installation of the proper equipment, process, device, or appliance, or control equipment, will be effected within a reasonable period~~

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.11-3(2). All devices, facilities and processes which are under construction or are existing at the time of the effective date of this Article, if found to violate any standards contained within this Article during actual operation, shall within a reasonable time be equipped with the necessary air pollution emission control devices or shall be modified as approved by the Department so as to comply with the emission standards of this Article.

.11-4. No person shall use any device or condition to conceal or to dilute the emission of a pollutant without actually controlling such emissions at or below the standards established in this Article.

.11-5. **Notification of Breakdown.** When upset conditions occur or the breakdown of a device, facility, or process, which has been registered pursuant to Section 710.11, results in or is likely to result in emissions which exceed the standards of this Article, the Department shall be notified of such occurrence as soon as possible, but in no event more than eight (8) hours after the breakdown. Emissions in excess of the standards of this article during the breakdown of equipment or upset conditions shall not be considered a violation for purposes of prosecution, provided:

.11-5(1). Said breakdown of equipment or upset conditions causing excessive emissions could not be reasonably anticipated and prevented, and

.11-5(2). The Department has been advised of the upset conditions or breakdown within eight (8) hours of its occurrence whether or not emissions actually exceed the air pollution standards of this Article, and,

.11-5(3). Immediate action is taken to repair the equipment and/or eliminate the upset conditions, and,

.11-5(4). Abatement of the upset conditions and/or repair is accomplished as soon as possible but in no event longer than ten (10) days. In the event that one or more of these requirements is not followed or the device, facility, or process has not been registered as required by this Article, persons emitting air pollutants in excess of the standards of this Article during breakdown of equipment or upset conditions shall be subject to prosecution.

.11-6. **Notification of Equipment Shutdown.** Whenever it is necessary to shut down equipment, facility, or process for non-emergency maintenance and such act causes or is likely to cause emissions in excess of the standards of this Article, the Department shall be contacted at least twenty-four hours prior to the anticipated shutdown for approval.

.11-6(1). Approval or disapproval for non-emergency shutdown of equipment as required in this section, shall be at the discretion of the Department and shall depend upon the necessity of shutdown, the potential contribution of emissions which would be added to the total air pollution in the area if the shutdown is approved, the climatic conditions and the amount and characteristics of the air pollution existing on the anticipated day of shutdown. Approval for equipment shutdown may be summarily rescinded by the Department upon notification when there are adverse air pollution conditions. (Ord. 531, Series 1971)

.12. **Offenses.** Any person who shall violate any provision of this Article or any provision of any rule or regulation adopted hereunder shall be guilty of an offense. Each provision violated shall be deemed a separate offense. Each day's violation shall be deemed a separate offense.

.12-1. Any person guilty of an offense may be fined in a sum not more than three hundred dollars ($300) or imprisoned not to exceed ninety (90) days, or both so fined and imprisoned. (Ord. 531, Series 1971)

.13. **Inspections.** For the purpose of determining compliance with the provisions of this Article, the Department through its authorized representatives is hereby authorized and directed to make inspections of all air contamination sources and to take samples of air for analysis whenever necessary to determine the quantity and character of air pollutants. In the event that any person refuses or restricts entry and free access to any part of a premise, or refuses inspection or sampling of any device, facility or process where inspection is sought, the Department through its authorized representatives shall seek from the County Court of the City and County of Denver a warrant for inspection and order that such person refusing inspection be required to permit an inspection at a reasonable time, without interference, restriction or obstruction. The said Court shall have full power, jurisdiction and authority to enforce all orders issued under the provisions of this Article.

.13-1. It shall be unlawful for any person to violate the provisions of any warrant for inspection and order issued under the provisions of this Article.

.13-2. It shall be unlawful for any person to refuse to allow or permit the Department free access to any premise when the authorized representative is acting in compliance with a warrant for inspection and order issued by the County Court of the City and County of Denver.

.13-3. **Interference.** No person shall hinder, obstruct, delay, resist, prevent in any way, interfere, or attempt to interfere with the Department in the performance of its duties in investigation of a suspected air pollution violation. (Ord. 531, Series 1971)

.14. Rules and Regulations.

.14-1. The Board of Health and Hospitals is hereby authorized to adopt and the Manager shall promulgate rules and regulations deemed necessary for the proper and effective enforcement of the provisions of this article. Such rules and regulations shall be consistent with the provisions of the article and the standards established herein. (Ord. 531, Series 1971)

.15. Appeal to the Board of Health and Hospitals.

.15-1. Any person aggrieved by any act taken by the Department pursuant to the provisions of this Article may appeal for a variance to the Board of Health and Hospitals within fifteen (15) days in the manner provided by the by-laws and rules of procedure of said Board.

.15-2. **Variance on Appeal.** The Board of Health and Hospitals may authorize, upon appeal in specific cases, such variance from this Article or the rules and regulations adopted pursuant thereto, subject to terms and conditions fixed by the Board, as will not adversely affect the public health where, owing to exceptional and extraordinary circumstances, literal enforcement of applicable provisions will result in unnecessary hardship. The burden of proof is upon the appellant to show by clear and convincing evidence that:

.15-2(1). The appellant will suffer undue hardship if the variance is not granted, and,

.15-2(2). The variance will be in harmony with the spirit and purposes of the Air Pollution Control Ordinance.

.15-3. **Hearing Commissioner.** The Department of Health and Hospitals may within the limits of the appropriations therefore, employ a Hearing Commissioner, stenographer, and such other employees as shall be necessary to carry out the terms and functions of this ordinance. The Hearing Commissioner shall be employed by the Manager, with the approval of the Board of Health and Hospitals, and shall serve at their pleasure. The Board of Health and Hospitals may delegate to the Hearing Commissioner the hearing of all matters, appeals and cases which the Board can hear under the provisions of this Article. Said Hearing Commissioner shall hear all testimony and prepare a written statement of his findings and recommendations to the Board of Health and Hospitals. The Board shall review all matters contained in the record and considered by the Hearing Commissioner as set forth in his written findings, and thereupon make a final decision and determination. The Board may or may not follow the written findings and recommendations of the Hearing Commissioner.

.15-4. **Judicial Review.** Any person aggrieved by a final decision of the Board of Health and Hospitals may seek relief therefore in a court of competent jurisdiction within sixty (60) days thereof. (Ord. 531, Series 1971)

.16. **Severability.**

.16-1. If any provision of this Article or any rule or regulation adopted and promulgated hereunder or its application to any person or circumstances is held invalid, unconstitutional, void or inoperative, such holding shall not affect other provisions or applications of the Article or of the rules and regulations adopted and promulgated thereunder. The Council hereby declares that in these regards the provisions of this Article are severable, and that the Council would have enacted the remaining provisions of the Article, notwithstanding such holding. (Ord. 531, Series 1971)

~~States Environmental Protection Agency or the District shall prescribe, to establish and maintain records of same, and to make periodic reports at intervals prescribed by the District.~~

SECTION 9. EMISSIONS DURING SHUTDOWN AND MALFUNCTION

(1) Emissions which, due to shutdown or malfunction, temporarily exceed the standard set forth by the District shall be deemed in violation of such standards unless the requirements of this section are satisfied and the determinations specified in Subsection (6) of this section are made.

(2) Planned Shutdown: When emissions during any planned shutdown and ensuing startup exceed the standards, the owner or operator of the affected facility shall notify the District by telephone no later than 3 days before the planned shutdown. However, if the shutdown is necessitated by events which the owner or operator could not reasonably have foreseen 3 days before the shutdown, then such notification shall be given as promptly as possible following the determination to shutdown and in no event later than 2 hours following the determination to shutdown. If the emissions exceed the standard for a period in excess of 4 hours, the owner or operator of the affected facility shall send written notice to the District no later than the end of the next working day following the fourth hour of excess emissions.

Such notice shall contain the following information in the order specified:

(a) The name of the air contaminant source and affected facility;

(b) Its location;

(c) The address and telephone number of the person responsible for the source;

(d) The reasons for and duration of the shutdown;

(e) The nature of the action to be taken during shutdown;

(f) The date and time for the action;

(g) The physical and chemical composition, rate, and concentration of the emissions during such shutdown and ensuing startup;

(h) The basis for determination that such shutdown is necessary; and

(i) The measures which will be taken to minimize the extent and duration of the emissions during such shutdown and ensuing startup.

(3) Malfunction: When emissions due to malfunction (or to unforeseen shutdown associated with malfunction) are or may be in excess of the standards, the owner or operator of the affected facility shall as promptly as possible and in no event later than two hours following the start of the malfunction notify the District by telephone. If it is anticipated that the malfunction will continue for a period in excess of 48 hours, the owner or operator of the affected facility shall send written notice to the District no later than the end of the next working day following the start of the malfunction. Such notice shall specify:

(a) The name of the source and affected facility;

(b) Its location;

(c) The address and telephone number of the person responsible for the source;

(d) The nature and cause of the malfunction;

(e) The date and time when such malfunction was first observed;

(f) The expected duration;

(g) The nature of the action to be taken to correct the malfunction; and

(h) An estimate of the physical and chemical composition, rate, and concentration of the emission.

(4) Within 10 days after the termination of a breakdown or malfunction continuing for a period in excess of 4 hours, the owner or operator shall submit a report detailing:

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(a) The time the excess emissions began and ended;

(b) The time of the beginning and end of the breakdown or malfunction which is asserted to be the cause of the excess emissions;

(c) An estimate of the physical and chemical composition, rate, and concentration of emissions which occurred and where continuous monitoring is required or is in effect (including visible emission detector), the strip charts with plots of all emissions monitored versus time, including a summary of the monitoring instruments; written records shall be expressed in units of the applicable standard;

(d) An explanation and, where appropriate, an engineering analysis of the cause of the malfunction or breakdown;

(e) A description of those operating and/or maintenance procedures and practices in use prior to and during the occurrence which were designed to prevent or minimize the extent and duration of the malfunction or breakdown;

(f) Any other steps taken to minimize the extent or duration of the malfunction or breakdown;

(g) An analysis of what steps will be taken to prevent or minimize similar occurrences in the future; and

(h) Such additional information as the District may require.

The District may, for good cause, waive or extend the time periods for filing the report required by this subsection.

(5) If the specified time necessary to correct the unlawful emissions should exceed 10 days, then, upon receipt of such letter, the District shall immediately cause such letter to be brought to the chairman of the Hearing Board. The Hearing Board may consider granting a variance in accordance with the provisions of Air Pollution Control Regulation I, Section 10. Notification of completion of corrective actions must still be made by telephone to the District.

(6) Nothing in this section shall relieve a source from compliance with the standards set forth by the District unless the District determines that:

(a) The occurrence in question did not result from the failure of the owner or operator of the source to operate and maintain the equipment properly;

(b) All reasonable steps were taken to correct, as expeditiously as practicable, the conditions causing the emissions to exceed the standards, including the use of off-shift labor and over-time if necessary, and;

(c) All reasonable steps were taken to minimize the emissions resulting from the occurrence.

(7) In cases where malfunctions are of a repetitious nature, the District shall require the owner or operator to submit a written program outlining a time schedule and corrective actions which will result in a permanent solution to the problems.

While the District reserves the right to continually evaluate and require corrections of malfunctions, when more than 12 failures of the same or similar pieces of equipment occur in a twelve-month period, the District shall evaluate the failures to determine if corrective actions will be required.

(8) The District shall notify the owner or operator of the affected facility of the determination required by this section no later than 60 days after the date that all information required by this section has been submitted. Failure of the District to give such notification within a 60 day period shall have the same effect as a determination that the occurrence is deemed not to be a violation of the standards.

(9) Nothing in this section shall be construed to restrict the District's discretion to take, at any time, appropriate enforcement action under K.R.S. 77.240, if upon information supplied to the District pursuant to this section, or otherwise available to the District, the District determines that such action is necessary to protect public health or welfare.

~~b. Information to be given in the permit or license application shall include, but not be limited to, the following:~~

~~(1) Description of the proposed installation.~~

~~(2) Design capacity of the process equipment including process weight and process weight per hour.~~

~~(3) Expected physical and chemical composition of the emissions and pertinent design criteria such as discharge rate, concentration, volume and temperature.~~

~~(4) Type and general characteristics of the air pollution control equipment.~~

~~(5) Description and evaluation of the location of the discharge point of emissions of air contaminants and other factors relating to the dispersion and diffusion of air contaminants in the atmosphere.~~

~~(6) The relation of the discharge point to nearby structures and topography if necessary to appraise the possible effects of the emissions.~~

~~(7) Type and general characteristics of any equipment for monitoring emissions and related alarm and recording systems.~~

~~Any additional information, plans, specifications, evidence or documentation that the Department may require shall be furnished upon request.~~

~~4. *Conditions of Source Approval*~~

~~a. Approval to construct, install, alter, replace, or operate any source of emission shall be granted only upon demonstration to the satisfaction of the Department that the source will not violate any provision of the Air Management Code or Regulations of the Air Pollution Control Board or prevent or interefere with attainment or maintenance of any national ambient air quality standard.~~

~~b. Issuance of a permit or license shall not exempt any person from prosecution for violation of the Air Management Code, Regulations of the Air Pollution Control Board or any applicable laws of the Commonwealth of Pennsylvania or the United States Government. Where regulations are amended or new regulations adopted, the holders of permits and licenses issued prior to the effective date thereof shall comply with any new requirements within the period of time provided therein.~~

5. *Reporting Changes to Existing Installations*

a. Where it is planned to take any approved installation, equipment, or device out of service for any reason, except for normal plant shutdowns, the Department shall be notified at least three days in advance. Where the reason for being out of service is breakdown, malfunction or similar emergency which may increase emissions, the Department shall be notified by telephone immediately with a written confirmation in 24 hours.

~~b. No person shall change any installation such that the registered information concerning it is no longer accurate without first notifying the Department.~~

~~c. Where a change of ownership occurs at any approved installation, the new owner shall notify the Department within 30 days of the change of ownership.~~

~~B. EMISSION REPORTING~~

~~1. *Recording and Submission of Emission Information*~~

~~a. In addition to the provisions and requirements of Section II.A, the person responsible for any source of emission shall, upon notification from the Department, maintain such records as will disclose the nature, effects, extent, quantity or degree of air contaminants which are or may be discharged from such source or any other information as may be deemed necessary by the Department to determine compliance with applicable emission limitations or other control measures as well as the relative contribution of such source to air quality.~~

~~b. The required information shall be summarized on source reporting forms supplied by the Department and shall be complete. The required information shall be submitted within 30 days after the receipt of a source reporting form, unless a time extension has been granted by the Department.~~

~~c. Information recorded and copies of the source reporting forms submitted to the Department shall be retained by the person responsible for each source of emission for two years after the date on which pertinent report was submitted.~~

~~2. *Availability of Emission Data*~~

~~Emission data obtained from source reporting forms submitted to and verified by the Department will be correlated with applicable emission limitations and other control measures. All such emission data will be available for public inspection at the Department during normal business hours.~~

~~C. CONFIDENTIAL INFORMATION~~

~~Any records, reports, information, or particular part thereof, other than emission data, relating to secret processes, methods of manufacture or production, or otherwise entitled to protection as trade secrets, provided to, required or obtained by the Department shall be kept confidential.~~

SECTION 9.16. REPORTING OF START-UPS, SHUTDOWNS, UNAVOIDABLE FAILURES, UPSETS OR BREAKDOWNS.

Emissions exceeding any of the limits established by this Regulation as a direct result of start-ups, periodic shutdown, or unavoidable and unforeseeable failure or breakdown, or unavoidable and unforeseeable upset or breakdown of process equipment or control apparatus, shall not be deemed in violation provided the following requirements are met:

(1) The owner or operator of such process or equipment shall immediately notify the Agency of such occurrence, together with the pertinent facts relating thereto regarding nature of problem as well as time, date, duration and anticipated influence on emissions from the source.

(2) The owner or operator shall, upon the request of the Control Officer, submit a full report including the known causes and the preventive measures to be taken to minimize or eliminate a re-occurrence.

~~device or use any means, the use of which, without resulting in reduction in the total amount of air contaminant emitted, conceals or dilutes an emission of air contaminant which would otherwise violate the terms and conditions of this ordinance. This section shall not apply when the only violation involved is violation of a limitation based on concentration or presence of one or more air contaminants at locations beyond the premises on which a source or sources are located.~~

~~SECTION THIRTY SEVEN. Continuation.~~

~~The repeal of any ordinance or portion thereof by this Ordinance shall not affect or impair any act done or right vested or accrued, or any proceeding, suit or prosecution had, or commenced in any cause before such repeal takes effect; but every such act done, or right vested or accrued, or proceeding, suit or prosecution had or prosecution had or commenced shall remain in full force and effect to all intents and purposes as if such ordinance or part thereof so repealed had remained in force. No offense committed and no liability, penalty or forfeiture, either civilly or criminally incurred prior to the time when any such ordinance or part thereof shall be repealed or altered by this Ordinance, shall be discharged or affected by such repeal or alteration; but prosecutions and suits for such offenses, liabilities, penalties or forfeitures shall be instituted and proceeded within all respects as if such prior ordinances or part thereof had not been repealed or altered.~~

SECTION THIRTY EIGHT. Upset Conditions, Breakdown or Scheduled Maintenance.

Emissions exceeding any of the limits established by this ordinance as a direct result of unavoidable upset conditions in the nature of the process or unavoidable and unforeseeable breakdown of any air pollution equipment or related operating equipment or as a direct result of shutdown of such equipment for necessary scheduled maintenance, shall not be deemed in violation of this ordinance provided the following requirements are met:

1. Such occurrence in the case of unavoidable upset in or breakdown of equipment shall have been reported to the Division as soon as reasonably possible but no later than the next business day after the occurrence.

2. In the case of shutdown for necessary scheduled maintenance, the intent to shut down shall be reported to the Division at least twenty-four hours prior to the shut down and the exception provided by this section shall only apply in those cases where the maximum reasonable effort, including off-shift labor, where required, has been made to accomplish such maintenance during periods of non-operation of any related source operation and that it would be unreasonable or impossible to shut down the source operation during the maintenance period.

3. The person responsible for such emission shall upon request of the Commissioner submit a full report of such occurrence including a statement of all known causes and of the scheduling and nature of the actions to be taken to minimize or eliminate future occurrences including but not limited to action to correct the conditions causing such emission to exceed said limits, to reduce the frequency of ocurrence of such conditions, to minimize the amount by which said limits are exceeded and to reduce the length of time for which said limits are exceeded.

~~SECTION THIRTY NINE. Confidentiality of Records.~~

~~Any records or other information furnished to or obtained by the Division, Board or Council concerning one or more air contaminant sources, which records or information, as certified by the owner or operator, relate to produc-~~

SOUTH COAST AQMD

Enacted
Revised October 8, 1976
Revised December 2, 1977

Rule 430 Breakdown Provisions

(a) A person shall report any breakdown which results in a violation of any rule in Regulations IV or XI to the District within one hour of such breakdown or within one hour of the time said person knew or reasonably should have known of its occurrence. Such report shall identify the time, specific location, equipment involved and to the extent known, the causes of the breakdown. The estimated time for repairs shall be reported as soon as possible thereafter.

(b) The provisions of any rule in Regulations IV or XI with the exception of Rule 402 do not apply to any emissions directly caused by a breakdown of any equipment provided all of the following criteria are met:

(1) The excess emissions did not result from operator error, neglect, or improper operating or maintenance procedures.

(2) Steps are immediately taken to correct the condition leading to the excessive emissions and to minimize the emission itself.

(3) The equipment is operated only until the end of a cycle or twenty-four hours, whichever is sooner, at which time it shall be shut down for repairs.

The burden of proving the criteria in this subsection shall be upon the person attempting to come under the provisions of this rule.

(c) If a violation of any rule in Regulation IV or XI is likely or suspected as a result of a reported breakdown, the Executive Officer shall promptly investigate and determine whether the occurrence constitutes a breakdown in accordance with the criteria set forth in subsection (b) of this rule.

(d) Equipment may be operated beyond the limitation in subsection (b)(3), provided that a petition for an emergency variance has been filed with the Clerk of the Hearing Board in accordance with Regulation V. In the event that the breakdown occurs outside of the normal District working hours, the intent to file for an emergency variance shall be transmitted to the District in the manner and form prescribed by the Executive Officer.

(e) Within one week after a breakdown which caused aviolation of any rule in Regulations IV or XI has been corrected, the owner or operator shall submit a written report to the Executive Officer which includes:

(1) A statement that the breakdown has been corrected, together with the date of correction and proof of compliance;

(2) A specific statement of the reason(s) or cause(s) for the breakdown sufficient to enable the Executive Officer to determine whether the occurrence was a breakdown in accordance with the criteria set forth in subsection (b) of this rule;

(3) A description of the corrective measures undertaken and/or to be undertaken to avoid such a breakdown in the future;

(4) An estimate of the emissions caused by the breakdown; and

(5) Pictures of the equipment or controls which failed, if available.